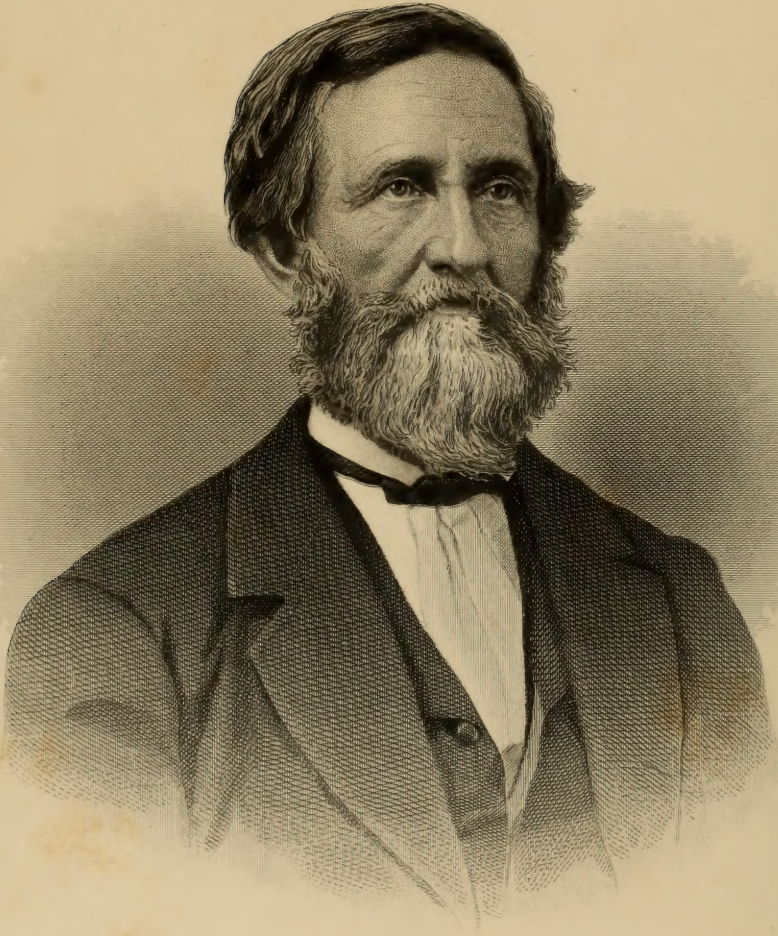


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Eng<sup>d</sup> by R. O'Brien

*Crawford W. Long M.D.*

DISCOVERER OF ANAESTHESIA

Demonstrated on James M. Venable by the use of Sulphuric Ether  
at Jefferson, Jackson Co. Georgia, March 30<sup>th</sup> 1842.

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As it is often important to each participant in public proceedings to recall what he did or said, we think that an index of the names mentioned in our pages during the past year will be a convenience to many. Where a name occurs more than once in the same article, only the page of its first occurrence is designated. Capitals are used with the names of authors whose writings have appeared in our pages for 1877.—Ed.

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JOHNSTONS'

# Dental Miscellany.

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## REGULATING TEETH.

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BY NORMAN W. KINGSLEY.

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Regulating teeth with the aid of appliances is purely a mechanical performance, requiring in the construction, adaptation and use of the instruments a knowledge of mechanics and an inventive ability of no ordinary character. Every case of complicated irregularity requires a variation in the application of the mechanical powers necessary to produce the result. No two complex cases that I have ever seen could be corrected by following the exact steps of any preceding case, which might have been, to all appearances, precisely like it. Consequently no plan of treatment, however detailed in description or profuse in illustration, can be of much benefit to the reader who has not a knowledge of dynamics and a ready ability to apply mechanical power, or combine and apply such powers as are best adapted to the end. Such ability is precisely the same in kind as has produced the marvelous machinery of the present age, and the extent to which such combinations can be carried must be unlimited. Regulating appliances will call into requisition the power to be derived from the screw, the wedge, the lever, the inclined plane, and elasticity. I have placed the screw here first in order because of its pre-eminence of power. The jack screw of the present day is a delicate and strong instrument of steel, with provision made to prevent oxidation. This ingenious contrivance was introduced into dentistry by Dr. Dwinelle, and the history of the discovery of the method by which oxidation was overcome is very interesting, and is here related in his own language:

"In the summer of 1849 I assisted Dr. Jehial Stearns, my tutor in medicine, of Pompey Hill, Onondaga County, N. Y., in amputating the leg of a laborer in a hay-field. We were summoned hurriedly away to the scene of the accident. Through oversight Dr. Stearns did not bring with him his amputating case, so he concluded to avail himself of mine, which I had brought with me—an old English set—a present from Dr. S., containing instruments of an ancient pattern, neatly arranged in a velvet-lined wooden box, covered with some kind of tough, black, embossed leather. The amputating knife, I remember, was particularly formidable in appearance, with no lack of material, nor wanting in length or breadth. It did good service on that day, and after the crushed limb of our patient had been successfully removed, and he was carried home on an improvised litter, I called to a friend who had taken charge of the cleaning of the instruments, for my case and its contents. To our surprise, it could nowhere be found. We looked at every quarter—under the rail fence, in every cranny of the old decayed stump near by, in every depression of the ground—nor were we satisfied till the spread hay had been raked clean from the field for many rods around—but all to no effect; it could not be found; and we were obliged to return home without it, leaving behind a pledge of a handsome reward for the finder thereof. Two seasons after, during another haying time, it was found in a crevice of the same old stump, where, perhaps, from being covered with a stray wisp of hay, it was overlooked before. Its appearance was strangely suggestive of Rip Van Winkle, his dress and his gun, after his twenty years' sleep. The seasons, and their vicissitudes of sun and rain, of wind and snow, had done their perfect work upon it. The embossed leather had separated from the wood, and curled down and off its sides in brittle scrawls. The glue that held the casket in shapeful form had been dissolved, and the whole economy of the box had parted company, like so many sticks of lattice work. The hinges had given way by corrosion, so that the box had opened without a key! The instruments—who shall attempt to describe them! The handles had fallen away from their hasps, and so thickly were they incrustated with rust, that, as they were removed from their articulated pockets, their velvet linings came away with them in rotten tags. But there was one, the amputating knife, that looked singularly unlike the rest. It, too, had lost its handle; yet its blade, though not brilliant, *was entirely free from rust!* When this blade first came under my observation I was unable to divine the cause of this singular phenomenon. On a second look, I noticed a peculiar knob or seeming deposit of considerable size near the end of its hasp. On cutting

through its dingy surface, I found it bright and silver-like beneath. On a closer examination I found it to be *zinc*, which had been soldered to it. The mystery was solved! The zinc being brought in conjunction with the steel, its magnetic opposite, kept up a feeble galvanic current, which forbade the oxidation of the blade. Something like the exclamation 'Eureka!' went echoing down all the avenues of my being. Indeed, I felt that *I had found it*.

"Hitherto most of the instruments used by our profession for regulating teeth, of necessity, were composed of the superior metals, such as gold, platinum or silver; they being so soft in their quality, to make them strong enough to resist the force required for their practical use involved their being made so large and clumsy that they usually defeated their purpose, or compelled us to be satisfied with only a partial success. Here, then, was an opportunity to construct the smallest as well as most powerful instrument of *steel*, to be placed in the mouth with impunity. You had only to drill a hole in the steel and plug it with zinc, to give it the same immunity from oxidation as gold or platinum. A moment's reflection selected the *jack screw* as the most powerful instrument, in proportion to its size, known in mechanics. Within a few hours I had a number of them made, from a quarter to over an inch in length, with various terminating points or ends, and with interchanging screws and nuts, some of which I have in use to this day, and all of which have ever been free from rust. It is only necessary to replenish the zinc, as it wastes away by oxidation, to keep them in order and ensure them from rust. Sutton & Raynor, of this city, made them for the profession more than

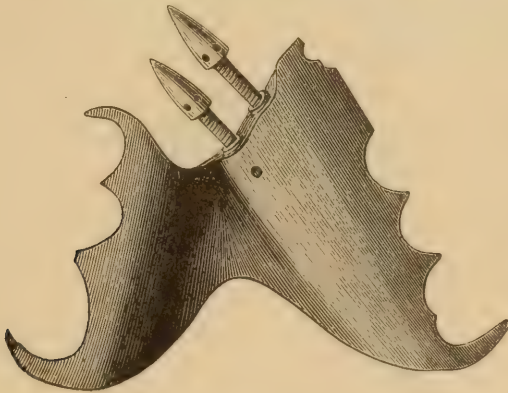


FIG. I.

twenty years ago, and they, with improved forms, have been in use ever since."

Some of the results accomplished by jack screws have been described

in former numbers of this journal. Before such screws were made by the instrument makers and placed on sale, those which I required were made in my own laboratory, and especially adapted to the case under treatment, and even now the plan then followed would be found advantageous.

Fig. 1 shows the employment of two screws upon the upper jaw. The plate was of vulcanite, and the screws have no other nut than the plate itself. The plate was vulcanized around the screws, thus making the thread very perfect. This plate was used to drive out a very stubborn canine, and also to twist a central incisor.

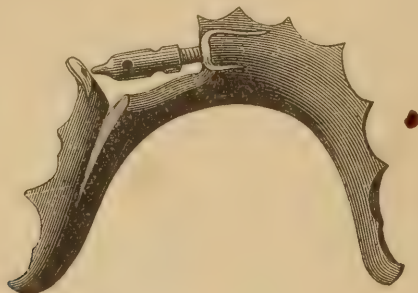


FIG. 2.

Fig. 2 shows another combination of plate and screw, and adapted to the lower jaw. In this case a piece of gold was inserted to form the nut of the screw, as shown in the engraving. This apparatus was used to force out two bicuspid—the first of which was considerably within the line, and the second one less so. Its action can readily be comprehended from the cut. The force of the screw here is distributed to all the teeth on one side, and concentrated on the bicuspid on the other. Fig. 3

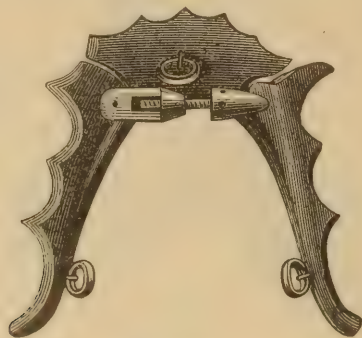


FIG. 3.

is an illustration of the same principle applied to both sides of the lower jaw, and was used in a case where the inferior dental arch was narrowed and the canines pushed outside the line. Elastic straps were attached to

the extremities of the plate, as seen in the engraving, and drawn forward over the canines, which came into line as soon as the arch was widened. The spreading of the lower jaw is ordinarily much more difficult than the upper, and such appliances as Figs. 2 and 3 possess peculiar advantages in utilizing the extraordinary power of the screw, when the presence of the tongue would make a screw bearing directly on the teeth inadmissible. The jack screws which have been placed on the market are very neat and effective instruments. There are three kinds represented in the following cuts—Figs. 4, 5 and 6.



FIG. 4.

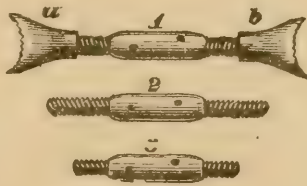


FIG. 5.



FIG. 6.

Those shown by Fig. 4 were first introduced, and are the kind which I have always used in conjunction with plates. Those represented by Fig. 5 show a crutch at each end, and the screws turning in opposite directions. This plan would, undoubtedly, be advantageous if two teeth directly opposite each other, and both of which required moving the same distance and offered the same resistance—conditions which are rarely found. While this pattern will evidently fulfill all the requirements of the former, I have never used it in the special cases for which it seems to have been invented.

I never use jack screws except in conjunction with a plate for two reasons—first, I never find occasion to move equally the teeth upon which such a screw would rest; and secondly, a vulcanite plate gives not only the facility of distributing and concentrating pressure at will, but the bearing of the vulcanite on the teeth is less injurious than the metal. The screw in Fig. 6 is a later invention, and is substantially a combination of both the other forms, being an intended improvement upon the first pattern by adding a revolving crutch to the end of the screw.

Each and all of these forms will be found to be of incalculable value, when judiciously used, in moving malposed teeth.

## OSTEO-DENTINE—INFORMATION WANTED.

*Boston, December 5, 1876.*

A lady, twenty-one years of age, of nervo-bilious temperament, rather tall and slight, and of delicate constitution, has had, in the past three years, the pulps in three of her teeth partially ossify.

The leading characteristic of the patient's teeth is their extreme sensitiveness. The smallest cavities, no matter where found, give her such pain on being excavated, that it is with the greatest difficulty that I have been able to fill them, notwithstanding her willingness to bear almost any amount of suffering, if by so doing she might save her teeth.

The first one attacked was the left inferior second molar. The most prominent symptom from the beginning (the last two cases being but repetitions of the first) has been the feeling of pressure or tightness, as though a string was tied tightly around the neck of the tooth. It was very sensitive to the touch, and heat and cold. There was no soreness in the alveolus over the root of the tooth. The cheek would sometimes flush on the outside and puff out on the inside in the vicinity of the affected tooth. The neck would often swell in the region of the sterno-mastoid muscle, and the pain in the tooth, although at first more of an intermittent character, became at last nearly constant and very intense.

After six or eight months' suffering, which began to tell seriously on the lady's health, it became necessary to do something for her relief.

After consulting with several older, more experienced and skillful dentists than myself, without getting any particular light on the subject, I concluded to extract the tooth. Having done this, it was broken open and several pulp stones found, showing the cause of the trouble.

The irritation of the pulp and nerve had been of so long standing and of such a severe nature, that I expected to find signs of it other than the presence of osteo-dentine, but there were none. The pulp was as clean and white, without the slightest trace of inflammation or redness whatever, as though in a perfectly normal condition.

About a year after the extraction of this tooth, its mate on the right side gave similar signs of trouble. After waiting long enough to feel that there was no doubt as to the cause of the disturbance, I removed a small filling and found the bone of the tooth exceedingly sensitive. After several applications of arsenic, which seemed to have but little effect, I succeeded in reaching and destroying the pulp, but not without inflicting great pain, in cutting from the bottom of the cavity to the pulp

chamber, which was quite a distance, and accomplished only after several sittings. Several large pieces of bone were removed with the pulp.

The roots were filled with oxychloride of zinc and the crown with gold.

The tooth has done very well since, but not as well as many that have lost their pulps from other causes, there being more or less soreness most of the time. A few weeks ago the adjoining tooth, the right inferior bicuspid (the first molar having been extracted years ago), was attacked with all the characteristic symptoms of the other two.

The lady not being very strong, it was my opinion that the effort necessary to save the tooth, judging from the last case, would cause a greater loss to the general system than would the sacrifice of it. I accordingly extracted it. One of the corners of the pulp was found ossified a distance toward the centre of about a line. This, like the first, exhibited no signs of inflammation.

What is the best treatment when ossification of the pulp is diagnosed?

What can I do to prevent its further appearance in the case above referred to?

D. M. C.

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The subject is one of general interest, and we invite replies.—ED.

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## INTRODUCTORY LECTURE TO THE WINTER COURSE OF THE PHILADELPHIA DENTAL COLLEGE, SESSION 1876-'77.

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Delivered November 6th, 1876, by HARRISON ALLEN, M.D., Professor of Anatomy and Surgery.

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PHILADELPHIA DENTAL COLLEGE, *Phila.*, Nov. 13th, 1876.

Prof. HARRISON ALLEN, M.D., 117 South Twentieth Street, Philadelphia, Pa.,

DEAR SIR: I take great pleasure in enclosing the petition signed by a committee of students of the Philadelphia Dental College, appointed in compliance with a resolution *unanimously* adopted at a meeting of the class, held at the college on the 9th inst., to request of you permission to publish your address delivered before the class at the opening of the present session, on Monday evening, the 6th inst. And, sir, I but express the sentiments of each and every member of the class, when I say that we shall esteem it a great favor if you will comply with their request.

Very respectfully,

JOS. R. C. WARD, *Pa.*, *President*.

*Philadelphia, Nov. 13th, 1876.*

Prof. HARRISON ALLEN, M.D., Philadelphia, Pa.,

DEAR SIR: We, the undersigned committee, representing a class of one hundred and thirty-three\* students of the Philadelphia Dental College, from forty different States of the Union and foreign nationalities, having heard with pleasure your very able and instructive address, delivered before the class on Monday evening, the 6th inst., at the opening of the present session, and desirous of availing ourselves of the many suggestions contained therein, do most respectfully request of you a copy of the same for publication, and sincerely trust you may grant our petition.

Very respectfully yours,

J. B. WEILER, Pennsylvania.	C. N. WEBSTER, Michigan.
T. L. NICKLIN, Oregon.	B. K. BRYAN, Kentucky.
THOS. G. COWARDIN, Virginia.	JESSE R. TOWNSEND, Kansas.
GEO. H. McMICHAEL, Canada.	P. V. GUERRY, Georgia.
W. P. O'NEILL, M.D., South Carolina.	H. C. HERRING, North Carolina.
J. R. CALLAHAN, Ohio.	J. L. MCGREGOR, New Hampshire.
FABIO BERASAIN, Bolivia, S. A.	H. W. GRIFFITHS, England.
FRED. P. MOORE, New York.	GEORGES GIRARD, France.
E. W. WHITLOCK, Illinois.	A. N. FERRIS, Iowa.
INN. DIORE, Mauritius, E. I. Islands.	J. GODLEY, New Jersey.
C. S. WARDWELL, Connecticut.	CHAS. A. ANDERSON, Massachusetts.
MAX A. WUNDER, Saxony.	GEO. A. COLOMB, Louisiana.
CLIVE, R. Da C., Belisario, Australia.	GEO. F. EAMES, Maine.
J. LAWRENCE, Cuba.	HENRY J. MARSHALL, Rhode Island.
T. J. MORTON, Wisconsin.	W. G. WINTERS, California.
A. RICHTER, M.D., Austria.	CHN. BOLENS, Switzerland.
J. A. SANDUSKY, Tennessee.	J. F. KELLY, China.
JOSE PIO ALVES, Brazil.	GEO. KIRCHNER, Germany.
EMIL E. KLINGELHOFFER, Prussia.	W. J. VERGE, Nova Scotia.
T. MARTINEZ ORDONEZ, Columbia, S. A.	R. C. RENFROW, Arkansas.

*117 South 20th Street, Philadelphia,**Nov. 23d, 1876.*

MR. JOS. R. C. WARD, President, and MESSRS. J. B. WEILER, T. L. NICKLIN, THOS. G. COWARDIN, C. N. WEBSTER, GEO. H. McMICHAEL and others, Committee,

GENTLEMEN: In reply to your courteous communication of the 13th inst., which was placed in my hands on the 20th inst., I would say that the manuscript of my lecture is at your disposal.

As representatives of the class, I beg you to accept my best wishes and believe me to remain

Very truly yours,

HARRISON ALLEN.

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\*The class has increased to one hundred and forty-five.

GENTLEMEN: I have been appointed the representative of the faculty of this institution to welcome you to the ensuing course of instruction. I earnestly hope that the session so propitiously inaugurated may have a harmonious ending. Many of you are beginning your studies; others are terminating them; some of you are practitioners who have returned from the field of practical study to refresh your stores of knowledge. In age, experience, in proficiency and natural inclination, you present various contrasts. But you are alike in this, that you are here for improvement. Each of you recognize that a deficiency exists which you come here to supply. You are advancing, or the need of this special course of instruction would not have been prepared for you.

To a very great extent periods of study are determined by the seasons. When the heats of summer are upon us the mind is inactive, the inclination to mental effort returning with the withdrawal of the sun. The attempt to work against this natural inclination produces a variety of evils, the effects of which are often disastrous. We are all conscious of the prostration induced by physical exertion on a very hot day. The amount of expenditure of force is not easily replaced. Study is, in its way, as exhaustive of energy as moving the muscles, and is followed by the same necessity for recuperation. If, in consequence of the surroundings, this cannot be secured, prolonged debility and disease follows. As with the individual, so with the nation. The people living in the range of the least disturbance of these conditions of labor, associated with the smallest amount of expenditure of force, are best prepared for the strain of prolonged mental effort; for while the extremes of heat have been selected by way of illustration, those of cold might have been with equal justice employed. Hence, in founding institutions of learning, we select for their locality the temperate climates; and as these institutions are in themselves but the outgrowth of varied and complex conditions, the causes which have brought you here to-night are as far-reaching as the planet's curves—nay, as the plan of the solar system.

In a measure—without tracing too nice a series of causes and effects—in a measure you are here by reason of a nation living in a temperate climate, which is at the same time one among the newest of the centres of culture. Of a necessity, a new people is a practical one. The clearing of land, the development of husbandry, the exploration of mineral resources, the cares of protecting from intestine disturbance and foreign incursion—demand absorbing attention. The fine arts, literature and education are relegated to the older communities. But the demands of education cannot long be so disposed of—each country must have its in-

stitutions based upon the outgrowth of the necessities of its own people. Hence the foreign schools—no matter how excellent—cannot, in the nature of things, entirely supplant the need of those at home. Race peculiarities, political constitutions, social distinctions, all confirm this opinion. Nevertheless, almost every country excels in some few things which cause others to defer to it therein. We send our law students to Montpelier, and our art students to Paris and Rome. As a result of the practical character of the United States, already mentioned, it is natural that her mechanic arts—fostered by her rich deposits of iron and coal—should become pre-eminent. Conjoined to these facilities is the native ingenuity, which has fixed itself in caricature as a lank, overgrown, yet stalwart figure of Brother Jonathan whittling a stick. It is a result of these conjoined influences that the different branches of the mechanic arts should flourish with us. Conspicuous among these is the manufacture of dental instruments and artificial teeth. By a singular coincidence, the place of their principal manufacture is also the seat of extensive medical institutions; so that the professional and mechanical basis upon which the science and practice of dentistry rest is secured upon a wider foundation in Philadelphia than any other city in the world. The proof increases yearly that this supremacy is not likely to be seriously disturbed. Philadelphia is to the dental student, of whatever nationality he may be, the centre to which his thoughts naturally incline.

With regard to the PHILADELPHIA DENTAL COLLEGE, its faculty can assert that in no other institution can greater practical advantages be found. It possesses forty-two chairs for operations in the dispensary, and a laboratory which presents a busy scene of industry—a veritable workshop—where each student is learning for himself those minutiae upon which his future success will so largely depend.

An objection was recently urged against the appearance of this laboratory, that it was not as clean as it should be—too much plaster, fragments of rubber, etc., on the floor. The person, however, added, the room was crowded and all were busy. I think workshops always look more like places for work, where the evidences of work are in and about them. It is with workshops as it is with individuals—we are reminded of what they are by their appearance in their work-o'-day clothes. So when you hear of clean laboratories, you will probably also hear that they lack furnishing with that most important of all appointments—patients and the students themselves.

The advantages secured by college life are invaluable. The student is

stimulated to exertion; the rough friction with the minds of others is destructive of provincialism, with the general effect of elevating the professional standard. These advantages are becoming more and more appreciated, and the time is not far distant when ill-considered attacks against the collegiate form of education for dentists will be among the things of the past.

No one can understand the difficulties attending the inauguration and maintenance of such schools, except those who are actually engaged in the work. As is well known to you, these institutions lack endowment, and are dependent entirely upon the income derived from matriculates; so that when classes are small the schools are of necessity impoverished. As in all other enterprises, the beginning is the most difficult part. Little by little, however, the good will of the institution becomes established, and the task correspondingly easy. The PHILADELPHIA DENTAL COLLEGE, now emerging from the years of trial attending its admission into the list of educational institutions, bearing the increasing good will of its graduates—each of whom has been a self-appointed agent working in its behalf—is in a position to welcome a larger class than ever before assembled in the halls of a similar institution.\*

It is the observation of all thoughtful people visiting the International Exposition, that the most interesting objects to be seen there are the men and women—so, in a college, the most interesting sights are the students within its walls. While it requires an extraordinary combination of circumstances to create a centennial world's gathering, the PHILADELPHIA DENTAL COLLEGE has shown that it can have a world's gathering of students within its walls annually. One of the most striking features of this institution has always been the cosmopolitan character of its class; this peculiarity has increased with its growth, and will, it is likely, always characterize it.

The first appearance of a teacher before his class, at the beginning of

\* The following is a list of the number of matriculates and graduates of the Philadelphia Dental College each session since its foundation, and indicates the growth of the institution year after year:

Session.	Matriculates.	Graduates.	Session.	Matriculates.	Graduates.
1863-64.....	11.....	6	1870-71.....	74.....	36
1864-65.....	28.....	15	1871-72.....	67.....	33
1865-66.....	47.....	16	1872-73.....	95.....	49
1866-67.....	70.....	30	1873-74.....	80.....	30
1867-68.....	45.....	20	1874-75.....	100.....	41
1868-69.....	52.....	25	1875-76.....	105.....	44
1869-70.....	74.....	41	1876-77.....	145.....	
				993	386

a session, is one well calculated to awaken emotion. He cannot fail to be reminded of the personal relations which will inevitably grow up to unite still more intimately those of the older students, and to arouse novel feelings of relationship with the others. Those whom he has taught, remain to him as pupils forever; he is apt to think of them as such wherever they may be located; and he grows, perhaps unconsciously to himself, in the habit of looking at each student as one already started in life, and asks in his own mind if this or that quality developed by him will aid or obstruct his way in securing practice. Sir James Paget has preserved the record of one thousand students who came under his own pupilage. Perhaps our time could not be better occupied than in glancing at this record, and see whether we can secure anything from it to our advantage. It is true the distinguished writer has treated only of medical students, but perhaps the difference between the varieties of the genus *student* is not so great but that the moral he draws after contemplating the careers of so large a number may be with propriety applied to yourselves.

The subjoined remarks are extracted from his paper entitled, "What Becomes of the Medical Students?" which was published in the St. Bartholomew Hospital Reports, London, V, 238:

"It is said that, on entering the anatomical theatre for one of his introductory lectures, Mr. Abernethy looked around at the crowd of pupils and exclaimed, as if with painful doubt, 'God help you! What will become of you?'

"I am not aware that any attempt has hitherto been made to answer such a question. The grounds on which I venture an answer are in the knowledge of what became of a thousand of my pupils within fifteen years of their entrance at St. Bartholomew Hospital. Of the thousand, 23 achieved distinguished success; 66 achieved considerable success; 507 achieved fair success; 124 achieved very limited success; 56 failed entirely; 96 left the profession; 87 died within twelve years of commencing practice; 41 died during pupilage.

"In this table they are classed as having achieved distinguished success who, within fifteen years after entering, gained, and to the end of the time maintained, leading practices in counties or very large towns, or held important public offices, or became medical officers of large hospitals or teachers in great schools.

"Considerable success is ascribed to those who gained and still hold high position in the public service, or leading practices in good districts, or who retired with money earned in practice, or gained much more than ordinary esteem and influence in society.

“The fair or moderate success which was the lot of rather more than half those whose histories are known, was that measure of well-doing which consisted in having a fair practice—enough to live with, maintaining a good professional and personal reputation—or in holding ordinary appointment in the public service, or in the colonies, and gaining promotion in due course of time.

“Very limited success is assigned to those who, within the fifteen years, were not even in moderately good practice, or apparently likely to attain it; or who were just living, and that not well, by their work; or still employed as assistants in ordinary practice, or erratic and never prosperous; or doing much less than with their education and other opportunities of success they should have achieved.

“They who failed entirely were of a very mixed class, agreeing only in their total want of success. Of the 56 who made up the gloomy total, 15 were unable to pass examinations—some because of idleness or listlessness, a very few through sheer want of intellect. Of those who did pass, 5 failed because of scandalous misconduct; 10 through ill health or misadventure—sheer ill luck, as it seemed; and 10 through their continuance in the same habits of intemperance or dissipation as had made us, even while they were students, anticipate their failure.”

Of those who died we need not consider, but give the conclusion of Sir James' remarks:

“There might seem some hope of being able to tell the influences of different modes of education on the after life of medical students, and thence of deducing some scheme that should greatly increase the successes and decrease the failures. But to do this with accuracy would require many more facts than any one is likely to obtain. Of course, in watching and reflecting on the careers of my pupils, I have come to some strong beliefs on subjects of medical education. Only one of these I will set down, which may be of use to future pupils, and is justified by some hundreds of personal recollections. In remembering those with whom I was year after year associated, and whom it was my duty to study, nothing appears more certain than that the personal character—the very nature, the will of each student—had far greater force in determining his career than any helps or hindrances whatever. All my recollections would lead me to tell that every student may draw from his daily life a very likely forecast of his life in practice, for it will depend on himself a hundredfold more than on circumstance. The time and the place, the work to be done, and its responsibilities, will change; but the man will be the same, except in so far as he may change himself.”

In so far as habit and training of the will are concerned, each student must administer to himself.

“O well for him whose will is strong—  
He suffers, but he will not suffer long.”

Let it be to you a purpose to practice in acquiring this will power—it is more precious than gold.

I hold it to be an element of the best success that you approach your future calling not merely in the attitude of one seeking to make a living. You should love knowledge for its own sake, and the rest will be added.

The world is edging onward; things are not as they were. Old precedents look faded in the light of the new day. The community you will practice in is a watchful, eager one. It will expose the pretense of the half-prepared practitioner as quickly as the ill-natured rival he may have across the way. To keep ahead of those about you will require constant exertion. It is well that it should be so. It is the quack alone who desires to delude. You should not emulate the example of that London charlatan, who, essaying to cure all diseases of the ears by syringing, once had Mr. Pitt for a patient. The astute gentleman very naturally inquired into the asserted rationale of the method. Not being satisfied with the replies he received, he urged more extended reasons, but the quack defended himself by saying, “If your honor does not keep quiet I may do you an injury with my syringe.” It is true, the pretentious dentist, vaunting some novel treatment, has a great advantage over the aurist. The former practitioner, holding the jaws of his patient asunder, is securely protected, at least for the time, from the inconvenience of questions.

As a proof of how our standard of judgment, on the part of the community, is being elevated, I will quote the following from a curious book on sign-boards, recently published.

It is a portion of a doggerel rhyme placed in front of a dentist's office:

“In Coventry's street, near Leicester's field,  
At the Two Heads full satisfaction yield.  
Teeth artificial he fixes so secure,  
That as your own they usefully endure;  
Not merely outside show and ornament,  
But every property of teeth intent:  
To eat as well as speak; and firm support  
The falling cheeks—and stumps from further hurt.  
. . . . He scales, he cleans, he draws, in pain gives ease,  
Nor in each operation fails to please.”

The place of these wonderful performances was in London, and the

time 1760. Truly, if the modern dentist wishes to pursue similar methods of announcing his skill, he must go either to the very new communities just merging from darkness, or to the very old (so old that they are rather mouldy) that lie far off in some provincial nook, and has not received the impulses agitating the rest of the world.

We are living in an age of opportunity. Class restrictions have so far disappeared as to permit any one to enter in the list for the prizes that the professions offer. Cordial sympathy and encouragement await such. Success is limited by one's own ability only.

How different is this from the abrupt division between the learned and ignorant, which, until a few years back, obtained in some countries, and at one time in all. The unlearned citizen doffed his cap to the learned, or stood gaping at him as he passed. The laboratory of the savant was a witches' kitchen to the peasant. Hence Dr. Faust became a magician in the thought of the ignorant, and leagued with the Evil One. Goethe in his tragedy based upon the legend of Faust, has pictured this gulf separating the two classes, in the scene following Faust's meditations in his cell. The old man, wearied with over-much study, and distracted with problems that his mind has conjured but cannot lay, has walked out in the cool of the evening with his assistant. He meets a group of peasants, one of whom, in an attitude of great respect, addresses him. He speaks of the time of the pestilence, and of the wonderful cures the doctor had effected—how few corpses came out from the doors through which Faust had passed. But after they have gone Faust turns to his assistant and confesses that much of his well-directed efforts to heal had proved ineffective, and indeed, in more than one instance, he feared that he had unwittingly committed murder.

So, in another instance—a fact of verity, mentioned by President Felton, the Greek scholar, in his charming letters from Europe—we see how, in some conditions of society, the learned and the unlearned never have common points of contact.

The Professor, who knew the ancient Athens better than any modern Athenian, was strolling one evening about the neighborhood of the Acropolis. He could locate exactly the site of some noted structure of which not a trace remained. Here had been a statue—there the house in which such a statesman or philosopher was born. The fragments of the glorious temple that lay around him were eloquent—every characteristic line in the sculpture was to him as the type of a book that he had conned by heart. Passing round to another side of the ruins, he came upon a group of the Athenian people playing at quoits, or dancing to

the music of their simple instruments. Their minds were untouched by the associations of antiquity. The peasants were far, far away—alien and strange to all that had so absorbed the Professor. Is it to be wondered that he saddened as he thought that his learning was, in its present attitude, an impassable barrier between him and these people?

You may depend upon it, the more the community are prepared for a higher order of work, the better it will be to those dependent upon it for support. It should be your object to invite the strictest surveillance of your proficiency, and be at all times ready to acknowledge your defects, and correct them by study and reflection. Let me repeat that I do not believe success in its highest expression is possible, unless you are imbued with a love of knowledge for its own sake. The scholar pursues knowledge as the savage the wild beast—at first essayed from necessity, the pleasure of the act becomes in time the main object, and the animals of the wood and field are tracked for sport when no longer needed for food or dreaded as enemies. You will find your studies of priceless value; their results *must* be secured. But as your taste is cultured, ennobling and enriching all it touches, that which you have assumed by compulsion you will, I trust, continue by choice.

If this element in the lives of genuine searchers after truth be not remembered, they become unmeaning records, or, what is worse, are stained with the tears of bitterness and despair. Columbus, spending half a life in endeavoring to fit out his expedition—frowned upon by the learned—aided in time by a superstitious woman—finds at last the new world. He is seeking a passage to the Indies, and wastes the remainder of his days in endeavoring to pierce the wall of a vast continent. The glory of his discoveries after the first fervor had subsided, changed to contempt and imprisonment at the hands of those whom he had benefited. He dies obscure and poor. No one is allowed to infer from the unutterable sadness of this story that Columbus would have altered his career had he foreseen its wretched ending. He sought the higher life for what it would alone bring him, and was satisfied. Andreas Vesalius, anatomist, carrying on his researches by stealth—pursued and persecuted—is banished. After prolonged expatriation he receives the appointment of Professor of Anatomy in the University of Padua, but on his voyage thither is shipwrecked and lost. If any one should infer from this that Vesalius' life was a failure, he would make a great mistake. His task was self-imposed, he brought to it a life dedicated to the noble work; and he found in its performance his happiness.

Accept for a surety this truth. It is a key to the sayings of the wise.

Lessing wrote: "If I had truth in my clasped hand I would let it escape, so that I could pursue it again." Excelsior is the cry of the youth that ascends the mountain only to be found stark in the snow. The ballad of the Diver of Schiller tells us how a beautiful youth dives for a treasure, and wins it. He again dives for the hand of the king's daughter, but never returns. The end desired of all exertion stands like the veiled image of Sais—with the motto: "Yesterday, to-day—and forever, and no mortal has lifted my vail."

You will recall the rite of the Greek Church in the course of which the priest, attired in full pontificals, goes to the sea beach, and, casting in a cross set with jewels, blesses the sea to the uses of the mariner. Divers are there who seek the cross; the happy finder being privileged to wear it for a time, and collect money before returning it to the church. You are in the position of the priest. You have gathered up with one purpose your precious opportunity, to cast it from you into the future, well knowing that it will be in time returned to you doubled in value. How will you use it when thus regained? In the turmoil of modern life, the quieter is the better life. It is a merit nowadays to be without ambition. Your teachers would ask for you no such prizes as Paget has included in his first class. They are attained too often by a course of feverish unrest, with attendant checking of wholesome growth. The second and third classes should, without fail, be yours. And the regained cross should shine with undying lustre in such careers, reflecting again honor and usefulness.

I cannot conclude my remarks better than to quote in this connection the words of George Eliot, in describing the life led by her heroine, Dorothea Brooke—a rare character, of whom great things had been expected. I would wish for all of you no different career than the one expressed in these words:

"Her full nature, like that of the river of which Alexander broke the strength, spent itself in channels which had no great name on earth. But the effect of her being on those around her was incalculably diffusive; for the growing good of the world is partly dependent on unhistoric acts; and that things are not so ill with you and me as they might have been is half owing to the number who lived faithfully, and rest in unvisited tombs."

## HORACE WELLS.

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Extract from a Lecture by J. MARION SIMS, M.D.

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Horace Wells, born in Hartford, Windsor County, Vt., January 21, 1815, received a good English education, and at the age of nineteen (1834) began the study of dentistry in Boston, and in 1836 he opened an office in Hartford, Ct., to practice his profession. His mind was early turned to the subject of the possibility of preventing pain in the extraction of teeth.

In August, 1840, Dr. Brockett, of Brooklyn, then a medical student, went to Wells to have a molar tooth extracted. The operation was difficult, and so painful that Wells said that there ought to be some method of mitigating such suffering, and that he thought a man might be made so drunk by the inhalation of nitrous oxide gas as to prevent the pain of dental and other operations. This was four years before the discovery of anæsthesia, and it shows how deeply impressed this subject was upon the mind of Wells at that early day.

On December 10, 1844, Mr. G. T. Colton delivered a lecture in Hartford, Ct., on "Laughing Gas," and after the lecture he administered the gas to Wells and some other gentlemen. One of them (Mr. Cooley), while under its influence, fell over some benches, and was evidently badly injured. When he returned to consciousness Wells rushed up to him and inquired if he was hurt. He replied "No." Wells then said, "You must have been hurt, for you struck your legs against the benches." The young man then, at Wells' suggestion, pulled up his pantaloons; the blood was running down his legs, and his knees were badly injured. When again questioned by Wells, he said, "I did not feel any pain at the time." Wells then turned to a friend (Mr. David Clarke), who was near by, and an eye-witness of all this, and remarked, "I believe a man, by taking that gas, could have a tooth extracted or a limb amputated, and not feel the pain." So thoroughly was Wells convinced of this fact, that he told his wife on their way home that he intended to take the gas the next day and have a tooth extracted. On arriving home he left his wife, and went to see his friend, Dr. Riggs, to announce his great discovery, and his intention to take the gas for the extraction of a tooth. Riggs tried to dissuade him from it, but his mind was made up, and he said, "As the young man did not feel pain at the time he was hurt, why cannot the gas be used in the extraction of teeth?"

Early next morning (Dec. 11) Wells called on Colton, and engaged him to go to his office at ten o'clock and give him the gas. He did so, and Dr. Riggs extracted a large molar tooth. Wells did not seem to feel any pain. He remained unconscious for a few moments, and on coming to he exclaimed, "A new era in tooth-pulling! It did not hurt me more than the prick of a pin. It is the greatest discovery ever made."

From that moment Wells' enthusiasm was unbounded. He immediately began the administration of the gas, and daily extracted teeth under its influence; and other dentists in Hartford adopted the same practice with like success.

Dr. Marcy, then of Hartford, on witnessing Wells' operations, told him that, when a student at Amherst College, he, with other students, had for amusement often inhaled nitrous oxide gas, and also the vapor of sulphuric ether, and that the effects of the two were identical; and he suggested to Wells to try ether as a substitute for the gas. On this hint Wells did try it. He inhaled it himself, and he says, "I found it very difficult to inhale the vapor of ether in consequence of the choking sensation. For this reason, and for the reason that Dr. Marcy and myself came to the conclusion that nitrous oxide gas was not so liable to do injury, I resolved to adhere to this alone."

About a month after the discovery of anæsthesia by Wells, Dr. Marcy (January, 1845) gave the vapor of sulphuric ether to a sailor for the extirpation of a small wen on the side of his head. The patient was insensible and the operation successful, but Marcy, after this experiment, still advised Wells to stick to the gas, as being more agreeable, and, perhaps, safer than ether.

Wells continued the use of the gas, and the dentists (Riggs, Terry, Braddock and Crowfoot) and the doctors in Hartford were all convinced of its value as an anæsthetic.

But Wells felt that his great discovery should be laid more broadly before the profession and the world, and early in 1845 went to Boston for this purpose. Through his former pupil and partner, Dr. Morton, dentist, he was introduced to Dr. John C. Warren, Dr. Charles T. Jackson, Dr. Heyward, and others. Dr. Warren received him kindly, and Wells remained in Boston several days, with the expectation of giving the gas to a man who was to submit to an amputation at the hands of Dr. Warren. For some cause the operation was postponed. Wells was then invited to address the class at the medical college on the subject. He did so at some length, and then administered the gas for the extraction of a tooth. Unfortunately the gas-bag was removed too soon; the patient

was not sufficiently anæsthetized; the operation was, therefore, a failure; the patient screamed out, and said he felt the pain of extraction. Wells was hooted at, and unfeelingly hissed out of the amphitheatre by the thoughtless young men present, and he was pronounced a charlatan, and his anæsthetic a humbug. He returned home greatly mortified at his failure, was taken suddenly ill, and did not recover his health for many weeks.

In 1841-42 Morton was a pupil of Wells. In 1843 Wells established Morton in Boston, and for awhile was his partner. In 1845-46, after Wells' discovery of anæsthesia, they had frequent interviews, sometimes in Boston and sometimes in Hartford. After Wells' unfortunate visit to Boston, Morton became greatly interested in the subject of anæsthesia. Notwithstanding Wells' failure in Boston, Morton witnessed his continued success with the gas in Hartford, and was anxious to try it again in Boston. During one of his visits to Wells, in Hartford, in 1846, Morton asked Wells to show him how to make the gas. Wells told him to ask Dr. Charles T. Jackson to make it for him, as he was a chemist. On returning home, Morton called on Jackson. Jackson told Morton that the manufacture of nitrous oxide gas required some nicety of manipulation, that there was some danger of his getting nitric instead of nitrous oxide, and that he was too busy at that time to make it for him. Morton explained that he wished to use it to render patients insensible for the extraction of teeth. Jackson then told him to use the vapor of sulphuric ether, saying that it was perfectly safe, and that the students at Cambridge often inhaled it for amusement.

On the evening of the day (Sept. 30, 1846) that Morton had this interview with Jackson, he gave the ether to a patient and extracted a tooth without pain; and on October 16 he gave it in the Massachusetts General Hospital to a patient who had a tumor exsected from the neck by Dr. John C. Warren. On the next day (Oct. 17) he gave it to another patient for Dr. Hayward, who exsected a tumor from the arm; and from that time it came rapidly into use by the whole profession throughout the civilized world.

On October 27, 1846, Jackson and Morton published to the world, by letters patent, the discovery of *letheon* as an anæsthetic, but it was seen at once that their letheon was nothing more or less than pure sulphuric ether. Jackson resigned his interest in the patent to Morton, and soon sent a communication to the French Institute, claiming the honor of the discovery of anæsthesia by ether. Morton then set up his claim as the real discoverer, giving Jackson credit only for some unimportant suggestions.

While Jackson and Morton were sending bulletins to the Institute of France, Wells sailed for Europe in December, 1846, to lay his claims before the French Institute as the real discoverer of anæsthesia. His mission was a failure, and he returned home in March, 1847, to prepare the documents upon which his claim was to be presented to the Institute. And thus this tripartite war was waged with great fury, Morton and Jackson denying everything to Wells, and denying everything to each other. They denied that nitrous oxide gas had any anæsthetic properties. Wells brought forward his Hartford experience, and he gave the gas for surgeons in general practice, proving that prolonged operations could be performed under its influence. Dr. Marcy exsected a large gland, the patient being under the gas for fifteen minutes; Dr. Ellsworth amputated a thigh, and Dr. Berresford exsected a large tumor under its influence—all in Hartford.

But notwithstanding all this, Wells saw nitrous oxide gas supplanted by sulphuric ether as an anæsthetic—ether which he had tried and rejected. He saw his claims as the great discoverer of anæsthesia unrecognized abroad, disputed and set aside at home, and he was disappointed and dispirited. He then went to New York to lay his claims as the discoverer of anæsthesia before the profession of the great metropolis. Soon after his arrival in New York he showed signs of mental aberration, and on January 14, 1848, in a fit of madness, he ended his life with his own hands.

A few years after the death of Wells, Morton applied to Congress for a grant of money for the discovery of anæsthesia. The friends of Wells opposed the grant on the ground that Wells was the real discoverer. If Morton had claimed remuneration for the introduction of sulphuric ether as an anæsthetic he would, doubtless, have carried his point; this was honor enough. But he and his friends were not satisfied with this, and they claimed all the glory of the great discovery of anæsthesia. They admitted that Wells tried to make the discovery, but asserted that he failed, because nitrous oxide gas could not produce insensibility to pain. They even attempted to prove this before a Congressional committee appointed for this purpose. Morton declared that nitrous oxide gas never had, and never could, produce the effect claimed by Wells. Wells was dead, and there was no one to controvert him. The world had accepted ether and chloroform, and no one cared to inquire into the steps by which this was brought about.

If nitrous oxide gas can produce insensibility to pain, as Wells claimed, then Wells was the first to demonstrate the fact that anæsthesia can be

produced by the inhalation of gases and vapors. But if it does not possess this property, as asserted by Morton, then Morton was the real discoverer, by giving us ether. Let us see how curiously, how providentially, this question has been settled, and settled to the satisfaction of all unprejudiced minds. Colton seems to have been incidentally an important agent in establishing the truth. We have seen how Wells' discovery grew out of Colton's lecture in Hartford, in Dec., 1844. Colton continued his popular lectures on this subject for many years after this. In 1862 he lectured in the town of New Britain, Ct., and, as usual, related how the great discovery of anæsthesia was made, giving Wells all the honor. An old lady present wished to have some teeth extracted; she was afraid to take ether or chloroform, and she requested her dentist, Dr. Dunham, to get Colton to give her the gas for their extraction. He did so, and taught Dr. Dunham how to make the gas. One year after this (1863) Colton returned to New Britain on his usual annual lecture tour, and he found Dunham extensively engaged in extracting teeth under the influence of the gas. Colton and Dunham then went to New Haven, with the understanding that Colton was to lecture and Dunham to extract teeth. After the first day Dunham returned home, and Dr. Smith, of New Haven, took his place, and in a few weeks people came by thousands to take the gas and get teeth extracted. Colton, then seeing that it could be made a good business, went to New York and opened the Colton Dental Institute, where since 1863 he or his agents have given the gas to 93,000 persons without an accident.

All this disproves the assertion made by Morton and his adherents. If nitrous oxide gas produces anæsthesia to-day in the hands of Colton, it did it in the hands of Wells in 1846, as taught by Colton, and Wells was, therefore, the discoverer of anæsthesia. The fact that other anæsthetics are cheaper and easier of administration does not in the least invalidate his claims. It has been used in general surgery by many eminent surgeons in New York, Philadelphia, Baltimore and elsewhere. The writer has used it in difficult and prolonged operations (ovariotomy), requiring 30, 40, 57 and 60 minutes, and in one case an hour and a half, and always with the most satisfactory results. All this goes to prove that to Wells is due all the honor of the great discovery of anæsthesia by nitrous oxide gas—in 1844.

To Morton and Jackson is due the credit of introducing ether as an anæsthetic, in 1846; to Sir James Y. Simpson is due the imperishable honor of introducing chloroform as an anæsthetic, in 1847; and to Dr. B. W. Richardson, of London, is due the credit of introducing the bi-

chloride of mytheline, for the same purpose, at a later period. Morton's labors do not invalidate Wells' claims; Simpson's do not invalidate Morton's; Richardson's do not invalidate Simpson's. They are all good in their way; but Wells was the original discoverer of the principle upon which they all act.

In Boston, Mass., a monument has been erected to the discoverer of anæsthesia, but no man is designated thereon by name. The citizens of Hartford, Ct., have erected a bronze statue of Wells (by Bartlett) in their Capitol park, claiming for him the discovery of anæsthesia, the greatest boon that medical science has given to humanity since the immortal discovery of Jenner.

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## DENTAL ARCHITECTURE.

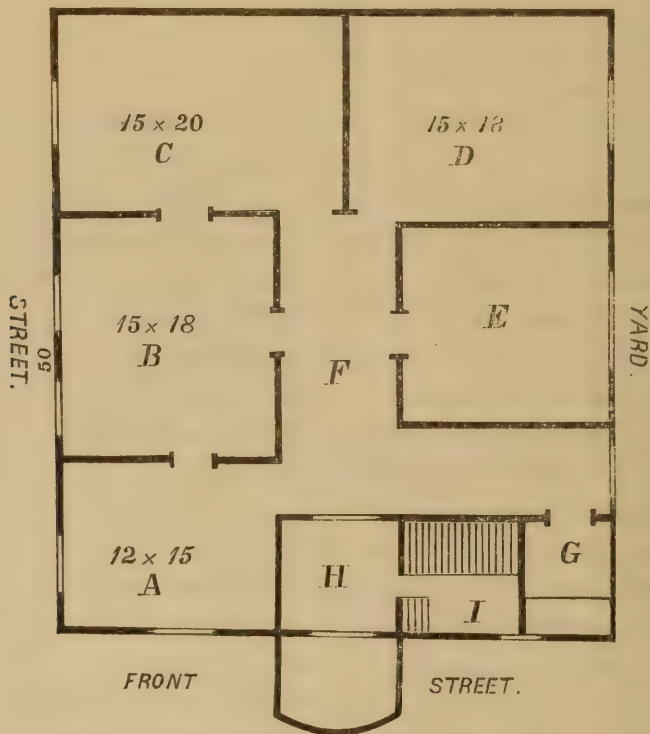
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By DR. C. M. WRIGHT, Basel, Switzerland.

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MR. EDITOR:—As this subject is one of considerable interest to the dentist, who may be said to live in the house, perhaps a plan of a dental office in a Swiss city may be acceptable. Dentists at home frequently build their own houses and offices. Over here, where rents are much cheaper and building very much dearer than at home, we depend upon rented houses for our homes and offices. Then many houses—nearly all, indeed—are arranged for separate apartments, for separate families on each story or flat. The dentist who wishes to be comfortable, and removed from his family during office hours, and from the smells from a kitchen, the howls of the babies, and the *loud* whisperings or pot-wrestling of the servants, takes two flats—one he reserves for his office, the other he consigns to the above-mentioned agreeable accompaniments of housekeeping. How often at home in large cities do our poor brothers live and work and die (daily) in places little better than nurseries or kitchens. Some of us can call to mind some very disagreeable scenes when we have dropped in on a neighbor dentist. A slip-shod girl, with sleeves rolled up, and arms and fingers steaming from the wash-tub, appears at the front door in answer to our ring. Half-opened doors disclose respectively the débris of a dinner-table and the play-room of the children; or we are greeted with sounds from the coal-cellar, or a child tumbling down-stairs, or a crying cherub, or (in one instance) the barking of a pet hound. We are left to find our way up a pair of dark stairs, and may drop in on a lady at her toilet, or a barricade of chairs made and

left by our friend's beloved children. The dentist himself lives and operates in a back room, with a northern exposure, and an exposure of the back yard and neighboring servant girls. Every sound from the attic to the cellar, and from the back yards of the block, comes to a focus in this room, and the doctor looks pale, worn-out and nervous. In the middle of an operation his beloved son, Bob, tumbles down the back stairs, or Mary is scolded and spanked by mamma in the front bedroom. When engaged with a very nervous patient, a kettle of hot water is upset in the kitchen, and the cook screams; or—well, you know how it is. The ladies in America who “keep house” become prematurely old from all these petty annoyances, and the dentist who lives in the midst of housekeeping will as surely die young or go to a lunatic asylum. These are the men who can prove that dentistry is a most unhealthy occupation.



H is a vestibule and stairway for the three stories.  
 A and C are operating rooms opening into the salon B.  
 E, Laboratory. D, Extra room. F, Hall.  
 G, water-closet. In the dwelling apartment above  
 E is a kitchen with range and stove floor.

Of course we on the Continent could have these troubles if we wished; but by taking two flats or two apartments, we can live in the house with the office under the same roof, and still be distinctly free from

housekeeping annoyances during business hours. In the houses over here some peculiarities of architecture are remarked by an American—that is, often the kitchen, laundry, etc., that are at the back of the house at home, are front street rooms here, while the *salon* and dining-rooms are at the back. I take the liberty of giving a plan of one flat of a house that I have found very agreeable for dental purposes for four years in this Swiss city, and possibly at home it might be selected as a good arrangement for comfort and economy. The house is three stories high, standing on a corner, and with gable end front. The attics are divided into a room for drying clothes and for three servants' bed-rooms. Each story is arranged for a small family. The house is attractive in appearance, with porches and balconies, and a pleasant garden or yard at the side.

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## AMERICAN DENTAL ASSOCIATION.

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### MEETING OF AUGUST, 1876.

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In the evening the Association met in the hall of the Philadelphia College of Dental Surgery, northwest corner of Tenth and Arch Streets, when the session was opened by Dr. McQuillen, who continued the discussion of the papers on operative dentistry.

After somewhat extended experiments during the years 1856–57, with a variety of forms of gold, he satisfied himself that soft foil is to be preferred over cohesive for saving teeth. More of it can be packed in a cavity than of the other form. He sometimes makes use of both varieties—finishing with cohesive.

Dr. Crouse, too, preferred soft foil, and had for a long time (twelve months) made use only of the heavier numbers—number 60 being the lightest. Although such fillings do good service, equally good and quicker work can be done in other ways.

Dr. Crouse did not favor the extraction of teeth and their subsequent replantation, except in rare instances. He has been very successful in his treatment of abscesses.

Dr. Shepard spoke further concerning the use of gold, and preferred the form of cylinders.

Dr. Butler would not always use any one form of gold. Soft foil had been long used, and most successfully. Under some conditions teeth were better filled with other metals than gold, and he believed that more

attention should be given to this variety of conditions. He spoke especially in favor of tin for use in filling children's teeth in certain forms of decay.

Dr. Clowes agreed heartily with Dr. Butler in the selection of different materials for different cases.

Gold, tin, amalgam and oxychloride all have their places. The latter he especially commended, and believed it the best filling for roots.

Drs. Field and Kelly both spoke briefly, the latter relating an instance where a tooth that was difficult of access and partially decayed twelve years ago, was speedily restored by being extracted, the root filled with gutta-percha, and replaced. It is still in use.

Dr. Bogue told of a few experiments of his own in the same direction, in which he had had one failure. He mentioned the use of platinum foil in exposed positions. He had restored a tooth with it so that the filling was hardly noticeable.

Dr. John Allen mentioned several cases of interest in this connection. He had performed the operation in cases where there was so great sensitiveness that he could not excavate in the mouth, and had had both success and failure. He recited the case of a boy who had four front teeth knocked out of his mouth into the sand. The teeth were put back, and became firm in their places, not even losing color.

The subject, after much further debate, was passed, and a report from the Committee on Dental Chemistry was read by Dr. Palmer, of Chicago, quoting largely from the dental literature of the year concerning the progress made in this particular branch.

The discussion of this paper was pending when the Association adjourned until morning.

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## A CHANGE OF CLIMATE.

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By C. M. WRIGHT, Basel.

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MR. EDITOR: At the meeting of the "American Dental Society of Europe," held in Paris last August, the questions of the effect of different climates upon the human teeth, and that of the types of teeth of distinct races of men, were discussed with considerable interest. These subjects are as pregnant with knowledge as a vast trackless primitive forest is full of trees, and we, the members of the society that met in Paris, were as keenly excited about, and as conscious of the magnitude of the knowledge hidden in these immense subjects, as a party of boys with small

shot-guns would be, if permitted to roam about on the borders of a trackless forest, full of birds and animals and unknown experiences. Like the boys, we talked in a large way, and one or two, more venturesome than the rest, stepped cautiously a little way into the thicket, and then, with large eyes and quickened imaginations, ran out again and reported—not facts, but *beliefs*. The boys who could be bold enough to leave their companions for a few minutes and trust themselves in the forest alone, would rush out and tell of birds with tails and feathers of wondrous beauty, and of animals of grim terror, and the other boys would talk profoundly of a previous knowledge of just such animals, or would disbelieve the stories entirely. To have knowledge of the direct effects of climate or meteorological influences upon the teeth, a great store of patiently gathered and patiently arranged and digested *facts* is the first step toward a theory. Half-digested theories may be worse than utter ignorance. To know the influence of race on the teeth, we should have also a large experience and extensive opportunities for recorded observations, and even accurate historical records bearing on the subject. The mixture of races in Europe and America makes it difficult to find distinct and pure types. To be sure, a casual observer can see here a blonde woman of a marked type, whose husband is of an entirely different type, character, color, temperament, and form, and yet both have lived for several hundred years past in Wurtemberg (through their ancestors). On the Continent we distinguish, in traveling, the ruddy-faced Englishman, the pale-faced American, and the dark-visaged Turk. We know the Frenchman, the North German, and the Scotchman. These have characteristic styles or distinctive traits, and whether the climate or their food and drink has had the most influence, who can surely say? Does the beer make the South German what he is, or has a few degrees of latitude done it? Has climate and the physical aspect of the country the powerful modifying influences on man that Buckle claims? Can we trace the evolution of man physically since the historic period accurately, and give the reason why? That we have distinct races of men, such as the Caucasian, the African, Australian, Mongolian, European and American, and that these are subdivided into distinct classes, as Scandinavian, Saxon, Norman, Anglo-Saxon, etc., etc., no one will doubt. Shem, Ham and Japhet still live in their children, and climate or some other influence has given us a great variety of the genus *homo*. This man has also a variety of languages, habits and customs. (We poor American dentists on the Continent have suffered considerable inconvenience, too, from this variety—especially of language.) What studies for life and for an eternity does this man and his surroundings offer!

The teeth alone of this wonderful animal bothers the brains of thousands of intelligent dentists, and many really scientific investigators. We think to-day that we are *beginning to know a little* more of the causes of the most common disease of the teeth—decay. What a stride we could take into the forest of knowledge if we did but *know* a minute, fractional part of what we *guess*! The American dentists of Europe have certain opportunities for observation that are denied to our brothers at home; but the best of us, at home and abroad, cannot always see what lies before us. We have as good eyes as the rest of the world—as good as the eyes of doctors, lawyers and divines—but how little we see. The oldest dentists can be puzzled by the simplest interrogations about the teeth, that they may have been examining for forty years past every day. The youngest dentist is frequently, if not always, much the most positive about his opinions. A young society may have the same confidence—but it is a grand thing to have the activity and the hopes of youth, and to have a *future* of probably increased wisdom.

At the meeting in Paris, after the vague but grand and stunning subjects of the Types of Man and Climatology had floored most of the members, a practical subject of the simplest kind arose—and many experiences, and the result of much or many observations were given, viz.: It is the opinion of the society, whose members have good opportunities for finding out the fact, that a change of climate, habits and customs, etc., has an effect directly, and in a short space of time, upon the human teeth. In America we have often heard the complaints of foreigners about having had good teeth till they arrived on those shores where the home of the brave and free is said to be—there their teeth were lost as their freedom was gained. On the Continent, it is observed by dentists that American and English residents blame the climate, from Stockholm to Florence (evidence has been reported from these and intermediate climates), for a rapid decay of their teeth. Professor Truman, who had been established but a few months in Germany, confirmed the observation of the oldest practitioners of Europe in the Society, in the fact that after a few months teeth of good quality required considerable repairing, from the ravages of decay, even where they had been put in order just before the journey to Europe. This seems to be the universal opinion and observation. The most generally accepted theory to account for the fact seemed to be that the change of climate and food and habits produced a sufficiently profound effect upon the system to affect the secretions of the oral cavity, which, in their turn, operated on the teeth. One

practical result to us is that we do not condemn the operations of our brothers at home when they fail in a few months in the mouths of travelers. May we have the same indulgence in return when acclimated patients go back home.

## BOGUS MEDICAL DIPLOMAS.

*Paris, November 20th, 1876.*

The old saying, that "falsehood runs a league while truth is putting on its boots," was never better illustrated than by the case of the bogus medical diplomas. In this case falsehood got so good a start, that it is next to impossible for truth to overtake it. The rascal who has been trafficking in diplomas purporting to have been issued from a Philadelphia medical college still exercises his lucrative industry, and still advertises diplomas *in absentia*, as if his nefarious trade had never been exposed. There seems to be no limit to human confidence and credulity. As a general thing, this topic has been suggested by some case brought before the French courts, where some quack has had to explain how he came by the title of doctor. This year, however, the legislative debates furnish me with a text. Last week M. Spuller presented a report upon the proposition of M. Roger Marvaise relative to the practice of medicine in France by persons claiming to have or having diplomas from some foreign university. It is an attempt to obtain a law to prevent foreigners from practicing medicine in France unless they have passed an examination here and received a license from some French Faculty. It is likely that this movement was instigated by the French doctors, who feel jealous at the success of some foreign doctors here. In fact, some of the most remarkable practitioners here are Americans. Dr. Ricord is a Baltimorean by birth; Dr. Johnson and Dr. Pratt, both created Chevaliers of the Legion of Honor by the French Government for distinguished services, are both constantly engaged, and the three best-known dentists, Dr. Evans, Dr. Preterre and Dr. Rottenstein, are all Americans. The first-named has most of the crowned heads of Europe among his clients, and Dr. Preterre is a famous mechanical operator. He is the editor and proprietor of the journal *L'Art Dentaire*, and has a museum of casts, representing his own operations, which is visited by dental surgeons from all parts of the world. Dr. Rottenstein has a very large practice, and once retired from business, but has now gone back to it. We have, besides, Dr. Crane, an American dentist, established here within the past few years, who is, I believe, getting a very good practice. The success of these men

is due to their superiority in their professions, but that superiority is not admitted by the French, naturally, and they feel sore at the idea that so much practice should be taken by foreigners.

This is, probably, the origin of the proposition made in the Assembly the other day, to make a law regulating the practice of medicine and dental surgery in France, and particularly the use of the title of "Doctor." Here titles mean more than they do in America, and the man who uses one must have a legal right to it. M. Spuller reports in favor of the proposition of M. Roger Marvaise, making a French license a necessity, and perhaps he is right in principle. Hitherto the situation of foreign practitioners has been regulated by the law of the 19th Ventose, An. XI, of the first Republic. That law, made for an epoch when the wars of the Consulate and the Empire created a great demand for surgeons, was voted specially for the times. Doctors were in great demand, and had to be sought abroad. Hence it authorized the Minister of Public Instruction to accord a permit to practice to any regularly educated doctor who applied for service. This authority, liberally used during the wars of Napoleon, was sparingly used afterward, and up to the end of the Second Empire only a limited number of foreign doctors were allowed to practice. During the war a few men like Drs. Pratt and Johnson earned their right to practice by services rendered to the Government. Tempted by the evident success of these clever practitioners, a certain number of professional men tried to settle here after the war. The Republic showed more liberality than the Empire, whether for good or evil I will not venture to say, and the Ministers accorded the privilege of practicing to a few men on condition that they should pass a sort of examination before a French Faculty within a period of eighteen months or two years. They were simply tolerated, therefore, until they had had time to pass their examination in French. Whether or not they have done so is more than I can say, but they continue to practice like the regularly licensed doctors above mentioned, and this fact seems to have at last stirred up the French doctors.

The facts of the case, in few words, are these: A person living in the town of Jersey, Island of Jersey, where he can escape the laws both of England and of France, advertises to sell diplomas *in absentia* to persons wishing to become doctors, but who cannot leave home to go through a regular course of study. Quacks, corn-doctors, horse-doctors and ambitious fools jump at this tempting offer. All that is required is the sum of £40 and a certificate of "irreproachable moral character," but this certificate may be signed by John Smith, or the first stable-boy at hand. The essential is the \$200. In return for the money the applicant gets a

regular-looking diploma, on parchment, covered with signatures and seals, from a Philadelphia university, making him a Doctor of Medicine. Last year General Schenck aided in the pursuit of this swindle, and gave documentary evidence that the college in question had no existence. Two days after the appearance of the letter of Mr. Fish and the Governor of Pennsylvania upon this subject, M. Francisque Sarcey published an article in his journal attacking the American educational system, and among other proofs of its bad character he cited the scandalous sale of degrees. The document was sent to Mr. Sarcey, who recognized his error, and promptly stated as much. He was perfectly satisfied, as were the other journalists who had touched upon the matter, that this was one of the poorest swindles of the day. Being daily engaged upon a daily journal, M. Spuller must have seen something of this, it seems to me; and yet he speaks of these bogus diplomas as if they were genuine, and intimates that Americans consider the traffic in them perfectly legitimate. In commenting upon the report one of his friends says: "In America, where, under the pretext of liberty, all the acts of quacks and charlatans are tolerated, there is no guarantee attached to the delivery of medical degrees. Who has not heard of the famous University of Philadelphia, which has its regular agents in Europe in order to make doctors *in partibus*?" During the past three years a certain Van Yver, established at Jersey, has flooded all France with the most tempting circulars. For the small sum of six hundred francs he promises to bestow upon any individual who has a mind the degree of doctor from the University of Philadelphia, duly signed and sealed. Any Paris porter, who at the same time treats corns, can procure one, perhaps at a lower price—second-hand. When attention was called to these scandalous facts, suit was brought against the University in America, but the jury, without doubt with the idea of not limiting the liberty of teaching, permitted the Faculty to continue its estimable commerce in Europe. These facts have never been denied."

The estimable commerce of this Jersey swindle goes on, and, thanks to the press of France, it proves extremely lucrative. Of course, Americans have to bear the blame. Our university system is made the object of ridicule, and if proof is asked why, *parbleu!* "is it not evident, since the fact has never been denied, that the University of Philadelphia has its agents in Europe to sell diplomas *in absentia*?" I find in this a chance for philosophic speculation, for if it takes so many years to correct one error, one may ask what progress the world could not have made had truth always been able to prevail?

## GRAY'S DARWINIANA.\*

These are essays that deserve a careful reading. Though addressed to the popular ear, they are not attempts to amuse the occasional reader with ready-made science made up by the quantity by dealers in other men's thoughts. Most of them are accounts or criticisms of investigations in science in which their author bore no unobtrusive part, treating their subject in a philosophical and unmechanical manner, and all of them are connected with that enticing topic, the Darwinian theory. The high position of their author in the front rank of the botanists of our day justly claims the attention that his philosophical position might not otherwise attract—a position not uncommon, yet, when closely considered, not uninteresting. He is, and has been since the first, “scientifically and in his own fashion a Darwinian, philosophically a convinced theist, and religiously an acceptor of the creed commonly called the Nicene,” holding thus views sometimes thought incompatible.

The first of these essays was published in 1860, just after the appearance of Darwin's “*Origin of Species by means of Natural Selection*”; and in it Prof. Gray extended to the new-comer a frank, though critical welcome. The religious bearing of the new hypothesis interested him especially, and in the same year he wrote a discussion of the relation of evolution to design, and another on the harmony of natural selection and natural theology—points to which he several times later recurred. Shorter essays follow on the distribution and succession of the oak genus, the gigantic sequoia of California, and those singular plants which (one is almost tempted to say who) have the power of voluntary motion, the climbing and insect-eating plants; on Charles Darwin, and the physical and philosophical characteristics of his theory; and the volume closes with an essay, never before published, on the broader teleological aspects of evolution. Some half-dozen of the shorter of these articles were published in these columns within the last two or three years, as our readers will remember.

It is with a curious feeling of antiquity that one reads the opening words of this volume: “This book [of Darwin's] is already attracting much attention. Two American editions are announced,” etc., and notes the intellectual pleasure with which the author met the then novel arguments of that great work, the caution with which he avoided committing the journal for which he was writing to the extraordinary theory announced, and the anxiety with which he looked to Pictet and others

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\* *Darwiniana: Essays and Reviews pertaining to Darwinism.* By Asa Gray, Professor of Natural History (Botany) in Harvard University. New York: D. Appleton & Co. 1876. Pp. 396.

for some modifying theory to control in some measure the too rigorous and sweeping logic of natural selection. This hope has never been gratified; and yet there is little that Prof. Gray will wish to alter to-day, although in the sixteen years that have elapsed since that essay was written a great change has taken place in the world of science, which is quietly but irresistibly carrying the outer world with it. No theory met with greater opposition than that of natural selection. Men of science drew back from it with cold dislike, the clergy attacked it with violence, and society pelted it with ridicule. Yet to-day it stands in a position only second in strength to that of gravitation. And this success has not been barren. The whole theory of evolution, vastly extended, has been converted from a vague metaphysical fancy to a powerful philosophical system, and a new religious creed is dimly shaping itself. Nor is the influence wholly speculative. In the field of ethics, unfertile for so many centuries, new methods of culture are giving new results. Even art feels the influence, and the novelist and the poet are singing the triumph of the naturalist. Yet the dust and smoke of the conflict still hang heavily over the field of battle; and the limits of the conquest cannot everywhere be traced. At one or two points a half-recognized contest still continues; at others the field is quite clear. We can see now that the existence of the Deity was never in any way involved, and that the fundamental truths of the Spirit, whether of personal or Biblical revelation, were not in question. If the Mosaic accounts of creation are now treated rather as religious poetry than as rigorous fact, it is due to geological records that were established before Mr. Darwin sought the ear of the public. The most that can generally be said is that the growth of scientific thought has quietly altered our mental attitude, and modified some of our intellectual conceptions.

In three points, however, Darwin's theory did conflict with the orthodox creed—the belief that this world of ours is governed by special providence; the proof of the intelligence of the Creator from the evidence of design in nature; and the doctrine of sin that lies at the base of the creed. But it would be unjust to place the responsibility for the change which opinion has undergone, and is undergoing, in respect to miraculous interposition in nature, wholly upon the theory of evolution by struggle for existence. In extending the domain of law to the origin of species, Mr. Darwin only put the finishing touch to a work which had long been building. The reader may search far for an argument by a scientist against the belief in divine interference with natural laws. Its moral value seemed so great that few relinquished it without dread; and it has faded, as the belief in witchcraft faded, not before any special argument or fact, but under the irresistible power of the culture of the age, before

a movement that began with the revival of learning and has not yet reached its climax. The belief in never-changing law, held as Prof. Gray holds it, with the conviction that God does everything, each smallest atom obeying his will, and indeed existing only by "the immediate, orderly, and constant, however diversified, action of the intelligent, efficient cause," is certainly a religious—nay, more, an inspiring one. But Prof. Gray is no doubt right when he says that this is not the popular view, and the abandonment of special creation is only too generally a remission of Divine action to the remotest past. For good or for ill, the belief in special providence seems doomed, and we doubt whether many thinking men to-day would really expect any difference to arise from the use of prayer in hospitals, as suggested by Tyndall.

As to the second point, the relation of evolution to the design argument, we think Prof. Gray exaggerates its importance in making it a test question. Paley's argument was an ingenious and powerful one, but the conclusion that he reached (the intelligence and personality of the Creator) does not depend on it alone, and may well stand after the induction from nature is abandoned. In discussing this argument, we do not think the author appears to his usual advantage. His mind is candid and direct, he has thought at length upon the subject, and, indeed, his whole book turns upon it; yet, strange to say, he does not seem familiar with Paley's argument or the way in which it has been affected by the evolution theory. The point, however, although purely one of abstract reasoning, is not so abstruse as one might fancy from the usual treatment it receives in this country. Prof. Gray handles it most at length in his second essay, which seems a reproduction of a real correspondence between himself and a friend, "D. T." The argument of "D. T." was to the effect that Darwin had destroyed the strength of the design argument by showing that the complicated harmony of organic life arose, of necessity, from the operation of a very simple quality, the power of giving birth to descendants resembling almost but not quite exactly the parents, and the necessarily limited means of subsistence on our globe; and hence that, as far as the proof from nature went, the great first cause might not be intelligent, because that, intelligent, or unintelligent, the same results would have followed any creation of organic life, or probably any creation of matter. Prof. Gray does not fully apprehend the strength of this position. It is not a sufficient answer to say that the variation of species by law instead of miracle does not *disprove* design, or that complicated results produced by simple means *may* have been planned as fully as if caused by direct volition. This is true, but it is a mere negation. The positive force of the design argument fails because the complicated ends may not have been foreseen, and the only intelligence

logically required is the very small amount involved in the arrangement of the simple means—that is, in giving to matter a few properties (possibly reducible to the mere power of direct and vibratory motion), and to organized matter the power of reproduction. In short, the argument turned on the complexity, and that is now otherwise accounted for.

If the reader will turn to that often-referred to but seldom-read volume, Paley's "Natural Theology," he will see that Paley, who perfectly understood the scope of his argument, based it entirely upon certain very elaborate cases of harmonious adjustment, and never pretended that any inference of design could be drawn from simple arrangements. "A wen, a wart, a mole, a pimple, . . . a clod, a pebble, a liquid drop," might have been produced unintentionally, he admits, but an eye or a watch never, because they answer "a valuable purpose by a complicated mechanism," and there is no other way of accounting for the combination of such a number of nicely-adjusted parts than the supposition that the adaptation was the cause of their selection, and the thing was designed. We must remember that mere order does not necessarily show design; for that an arrangement is required so complex that it could not have occurred otherwise. Had Paley found rocking in the surf of the sea-shore a hollow log, partly filled with stones and sand, there would have been an order apparent to him in the arrangement of the contents. The large stones would have been at the bottom, the smaller ones above, with the sand filling the interstices, and any chips or lighter matter on the top; but he would not have attempted to draw from that order any inference of design, because that arrangement might equally well have come about without any intelligent act. That eminent thinker expressly concedes that he would be fairly answered if it could be shown that the organizations from which he drew his inference were "only so many out of the possible varieties and combinations of being which the lapse of infinite ages has brought into existence; that the present world is the relic of that variety, millions of other bodily forms and other species having perished, being, by the defect of their constitution, incapable of preservation or of continuance by generation." This very remarkable conjecture he rejects, on the ground that there was no foundation for it in fact, a position correct enough in the then state of knowledge. But our readers do not require to be told that this conjecture, which Paley suggested only to demolish, is just what Mr. Darwin has endeavored to establish by his theory of natural selection. And we think that the student has a right to expect that when the design argument is examined either by scientifically-inclined theologians or naturalists straying into philosophy, the main outlines of the subject shall not be obscured.—*The Nation*.

## CHLOROFORM AND DENTISTRY.

Referring to the death in Rahway (see Notes) an editorial in *The Medical Record* says :

The mere announcement of another death from chloroform has of late become so frequent that, unless some new pathological changes are noted in connection with it, or some important lesson can be learned in regard to the prevention of an accident, which is always deplorable, we are too apt to pass it over as a simple fact, which may possibly be of some value to the statistician. The association of the accident with the mere extraction of a tooth does not tend to raise it above the level of tame and commonplace occurrences. In fact, we have become so accustomed to look upon the two circumstances in the relation of cause and effect, that we cease to wonder at it, and our appetite pales at promise of a recital of details.

The recent death, at Rahway, N. J., is, however, of a character which may prove of more than ordinary interest in connection with some of the circumstances attending it. At least, it can do no harm to remind ourselves of the oft-repeated warnings concerning the danger of chloroform at a time when such an example of their significance is still fresh.

In another column we present a full account of the case. The manner in which the accident was produced, and the culpable want of care in preventing it, are matters which not only throw the most serious reflections upon the judgment of the dentist, but lay him open to the charge of actual criminality. There can be no doubt that death was due to the use of chloroform in this case; it is equally certain that chloroform should not have been administered at all; and it is also apparent that the person who assumed the responsibility of the administration was thoroughly incompetent.

In regard to the use of chloroform in dentistry there is but one opinion, namely, that it is always dangerous. As a general rule, it should never be administered at all for purposes of tooth extraction. In the present state of professional opinion upon the subject, the dentist who chooses to administer it, even in a special case, assumes a responsibility of which he should not be ignorant. So great is the prejudice against this anæsthetic among leading dentists, that many will not allow it to be administered in their offices, even when the direct professional responsibility is assumed by an experienced physician.

Although the fact cannot be very well explained, chloroform has taken more victims from the dentist's chair than from any other place. Indeed, it has gained its reputation as a dangerous article more in connec-

tion with simple tooth-drawing than with any other operation, however grave or formidable. A very good reason for the liability to accidents is the erect position of the body of the patient while in the operating chair. Taking this into account, authorities are unanimous in advising that chloroform should never be given except the patient is recumbent.

In the Rahway case the dentist not only defiantly violated the rule never to administer the anæsthetic for tooth-drawing, but he neglected all the usual precautions to guard against an accident. No surgeon cares to assume the responsibility of giving chloroform unless he knows that the stomach of the patient is empty, that the circulatory apparatus is in good condition, and the lungs free from disease. A previous inquiry into these conditions is as much a part of the administration of any anæsthetic as is the placing of the napkin to the nose. It appears in the case before us that all these preliminaries were neglected. The patient came into the office immediately after having eaten a hearty meal, and without any questions being asked, was at once placed in the operating chair. There was no loosening of waistband or shirt-collar, no examination of the chest—in fact, nothing was done except to order the little fellow to take long and deep inspirations, while the napkin was held closely against the nose. The result could have been easily foreseen. The overwhelming effects of rapid anæsthesia and the crowding impediment of a full stomach, in the most unfavorable of all positions of the body, did not invite death in vain. It would seem that the actual extraction of the tooth was done when the patient was already dead, or, at least, *in articulo mortis*.

The examination of the bodies of patients dying from the effects of chloroform have not thus far given us any satisfactory pathological explanation. The lesions have varied with each individual case, and have given rise to as many different theories. The careful and thorough examination of the body of the victim of the Rahway tragedy still leaves the question an open one. From a study of the pathological appearances, and from a personal inspection of all the organs examined, the most reasonable theory which offers itself to our mind, is that death occurred as the result of a direct operation of chloroform upon the nerve-centres, inducing paralysis of the heart. Although there were marked evidences of asphyxia, they were not complete enough to impress those who were present with primary importance in regard to the cause of death. We are aware that in cases of death by paralysis of the heart, both ventricles are usually filled with blood, and that in asphyxia only the right side of the heart is in that condition; but the circumstances of the case may, in the absence of what appears to be a better explanation, render the theory of asthenia still reasonably tenable. At the time of death both cavities

of the heart may have been distended, and the subsequent and prolonged application of galvanism to the precordia may have induced a sufficient amount of post-mortem contraction of the heart muscle to have emptied the cavities. The left ventricle being, for obvious reasons, the one most strongly acted upon, might satisfactorily account for its being entirely empty while the right side still contained some blood. Or, if we wished to carry our theorizing further, we might suppose that both ventricles were entirely emptied after death, and that the dark fluid in the right ventricle was the result of regurgitation. It may be, however, that both asphyxia and asthenia operated together in producing the effect; but the precedence which should be given to either involves the discussion of some questions for which, in the present state of pathology regarding deaths from chloroform, we are not yet prepared.

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### THE CUMMINGS PATENT.

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#### TO THE DENTAL PROFESSION :

We, the undersigned members of a Committee appointed by a general meeting of the Dentists of New York and Brooklyn, held at the New York College of Dentistry, Nov. 11th, 1876, adopt this method of calling the earnest attention of the profession to a new phase of an old but important subject, and of accomplishing, at the same time, the object for which we were appointed. We have learned that in the defense of certain cases in which suits have been instituted by the Goodyear Dental Vulcanite Co., against Dentists, for infringement of the Cummings patent, steps have been taken to lay before the Courts a line of defense and system of evidence different from those of any other case heretofore heard.

We have satisfied ourselves by proper measures, that the facts and testimony to be presented in this line of defense are of such character as to leave little if any doubt of their competency to deliver the Dental Profession from the onerous and unjust taxation to which it has been so long subjected; in other words, that it is in our power now to prove the illegality and invalidity of the Cummings patent. We say this with a full knowledge and appreciation of the fact of former efforts and failures.

With these firm convictions, we not only ask, but urge the Dentists of New York as well as other States, to contribute their efforts and means, both as societies and as individuals, to aid and sustain those who are working in behalf of the interests and just rights of the profession of the whole country; for every member of it is interested, either directly or indirectly, in the issue of these suits.

We make this appeal because, where such large interests are involved, and the testimony of so many witnesses in different localities is to be taken, the expense must necessarily be large in proportion; but this expense though large, can be made to bear lightly, by its division among many. Therefore if each Dentist who can be reached (all, of course, cannot)

would contribute a small sum, the amount needed could be obtained readily, and without inconvenience to any. If the means are furnished, the work will be done by earnest and honest men.

The defense in this instance is being conducted carefully, and with every effort to make it much less expensive than former ones. We feel a deep interest in this cause, we are doing all we can for it, and we urge every member of the profession to whose notice this may come to subscribe such amount as he may see fit, and forward it to the Treasurer of this Committee, or to Dr. R. Finley Hunt, 1806 H Street, Washington, D. C.; a receipt will be sent by return mail.

Where societies are already organized, we suggest that they take action in this matter. Where there are none, a temporary organization be formed, so that its officers or committee can solicit, receive and forward subscriptions.

Dr. WILLIAM H. DWINELLE, Chairman, 27 West 34th Street, N. Y.

Dr. WILLIAM H. ALLEN, Treasurer, 18 West 11th Street, N. Y.

Dr. NORMAN W. KINGSLEY.

Dr. FRANK ABBOTT.

Dr. C. A. WOODWARD.

A. N. CHAPMAN, Brooklyn.

Since the above was put in type, the Supreme Court of the United States has announced its decision, affirming that of the U. S. Circuit Court for the District of Massachusetts in favor of the Goodyear Dental Vulcanite Co. vs. Daniel H. Smith, three of the Justices dissenting.

This decision will not govern the cases which we are now defending, as our line of defense is almost entirely different from the one pursued in that case.

This decision was anticipated by many of those who were aware of the line of defense in the Smith case. Therefore we are not altogether disappointed, nor are we at all swerved by it from our determination to continue our defense to the end, with the fullest confidence of success.

## NOTES.

### Death in a Dentist's Chair.

A BOY EXPIRING AFTER INHALING ETHER  
—FOUR PHYSICIANS POWERLESS TO  
SAVE HIM.

A subject of talk in Rahway is the death in a dentist's chair of Walter Lewis on Friday evening. The boy was a pupil in the Montrose Military Institute, and had procured a short furlough to spend his fourteenth birthday at home, and intended to return to school on Monday next. He was greatly troubled with an aching molar in the left lower jaw. He lost much sleep in consequence, and being of slight, deli-

cate frame, he grew nervous and weak. He resolved to have the tooth extracted, and on Friday evening went to Dr. Westlake's office in Main street. The dentist was absent, and his son, Dr. Warren Westlake, undertook the work. Young Lewis said he wanted to take gas. Dr. Westlake chided him, telling him if he could wear a cadet's uniform he ought to have pluck enough to face the forceps without stupefying his senses. The boy insisted that he must inhale the gas; his mother had told him that he must do so, and he could not endure the pain without it. Dr. Westlake

saw that the boy would likely make a great noise and much trouble when the forceps were inserted and a pull was made; and, although he tried to persuade him to take the chair without the anæsthetic, he concluded to give him a whiff or two of ether. He put to the boy's nostrils a small bottle that held scarcely enough ether to cover the bottom. Young Lewis laid his head back, a young companion held his feet, and Dr. Westlake inserted the forceps over the troublesome tooth. The boy was not unconscious, only slightly dazed. He cried out once, although the pull had not been made. The doctor uttered a soothing word, and as the boy grew quiet, he slipped the tooth out, and laying it on his table, told Lewis to straighten up.

Young Lewis sat up, found a vacancy in his jaw, and said, "Why, Doctor, where is the tooth?" It was shown to him, and the next instant he clasped his hands over his head, and said, "Oh, Doctor, how my head hurts!" and then quickly laying one hand on his chest, exclaimed, "Oh, what's the matter with my heart?" Then throwing up both arms he fell back in the chair, gasping, and was unconscious.

Dr. Westlake says that he saw at once that the boy was dying. He instantly ran for the galvanic battery, and applying a disk to the boy's spinal cord at the back of the neck, and another over his heart, tried to rouse him with a shock of electricity. It had no effect, and Dr. Westlake sent across the street for Dr. Daly, and laid the unconscious lad on a sofa. Dr. Daly saw that the case was hopeless. Dr. Selover and Dr. Drake soon arrived, but the combined efforts of all those physicians failed in resuscitating the boy, who soon ceased to breathe. Late at night the body was taken to the residence of young Lewis's parents, in the same street. His father is employed in New York, and his mother has a fancy goods store in her residence.

Dr. Gillette, of Elizabeth, County Physician, was sent for and further examination was made. He was satisfied that there had been no irregularity on the part of Dr. Westlake, and he gave a certificate of death "from extracting a tooth." They decided that death was caused by the congestion of the venous blood at the mitral valve of the heart, which was superinduced by nervous exhaustion. The Coroner gave a burial permit on the representation of the physicians that a post-mortem examination was unnecessary.

Mrs. Lewis expressed dissatisfaction, and her distress would not be relieved by the assurance that the trifling amount of ether the boy inhaled could not cause his

death. She said it was adulterated chloroform that he took. She said that her son was healthy, although not stout. Other persons said that he had eaten scarcely anything in the past fortnight, and was weak and restless.

Dr. Westlake, who is a graduate in medicine as well as dentistry, assumes the entire responsibility, and courts the fullest investigation. His father has been a practicing dentist for about half a century.

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**"Death from Drawing a Tooth."**

TO THE EDITOR OF THE SUN.

*Sir:* This was the verdict of the County Physician in regard to the death of young Walter Lewis, which occurred in a dentist's office at Rahway, N. J. The boy was in delicate health, and had long suffered from an aching tooth, producing great nervous excitability. A small quantity of ether was administered, not enough to produce insensibility, but just enough to increase the nervous excitability. When in this condition the tooth was extracted. Death resulted, in my opinion, from the nervous shock, an occurrence which has taken place many times in dental practice. Only a few months since, a lady died in a dentist's chair in this city, simply from having a tooth drawn, and for which no anæsthetic was administered. If a sufficient quantity of ether had been administered to young Lewis to produce entire insensibility, the shock to the nervous system would have been avoided. I think the dentist made a mistake either in not giving enough ether, or giving it at all. The nerves should be rendered entirely insensible, which can be accomplished with little comparative danger in the use of ether; but do not draw a tooth for weak, nervous, excitable persons when they are but partially under its influence.

G. Q. COLTON.

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**American Microscopical Society.**

At the Annual Meeting of The American Microscopical Society of the City of New York, held Tuesday evening, January 9th, 1877, the following officers were elected for the ensuing year:

*President*, JOHN B. RICH, M. D., 35 East 10th Street, New York; *Vice Pres't*, WH. H. ATKINSON, M. D., 41 East 9th Street; *Secretary*, O. G. MASON, Bellevue Hospital; *Treasurer*, T. D'ORÉMIÉULX, 7 Winthrop Place; *Curator*, JOHN FREY, Bellevue Hospital.

O. G. MASON, *Sec.*

JOHNSTONS'

# Dental Miscellany.

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## ELASTICITY.

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By N. W. KINGSLEY.

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Next to the jack screw, there is no mechanical power used in regulating teeth of such importance as that derived from elasticity; that inherent property possessed by certain bodies of returning to their former shape when bent or strained.

The jack screw can be regarded as first in importance only because it possesses greater power; but its application is limited. The force of elasticity is readily obtained and applied, and has been in use by mankind from the earliest dawn of the arts. This power has rendered effective alike the simplest and the most complex machinery. The bow of primitive warfare and the chronometer of civilization are equally dependent upon elasticity for their results, and whether derived from the springing of metal or the resilience of rubber, it forms the most convenient and valuable aid in regulating teeth which is at our command.

Elastic ligatures cut from small rubber tubing can be applied in a multitude of cases. The dental arch may be widened or contracted, the teeth elongated, shortened or made to rotate in their sockets, by their judicious use. It is but necessary to obtain a fixed point for the attachment of the ligature, and with the other end stretched over the offending tooth, the result is but a question of time. By a little ingenuity a single ligature may be made to move several teeth into line, even when they stand alternately, one without and one within the arch, and even to twist one or more in the sockets at the same time. One of the most useful

applications of the ligature is in contracting the arch, as in cases where the incisors are too prominent. In some cases it may be only necessary to place a cap over the incisors, and stretch the ligature from the cap and secure it to the extreme back teeth. In most cases, however, it will prove less a cause of irritation to the gums along where it passes to adapt a plate over the roof of the mouth, extending behind the molars, and secure the posterior ends of the ligature to the plate, rather than to the teeth.

An admirable illustration of what can be done in this way is shown by figure 1. All the teeth, in this case, were brought into a symmetrical curve, the front teeth being carried back and the sides expanded by this fixture alone, in the short space of seven weeks.

To enlarge the arch to any extent by the use of elastic ligatures involves a point of attachment external to the arch, and, as this can only

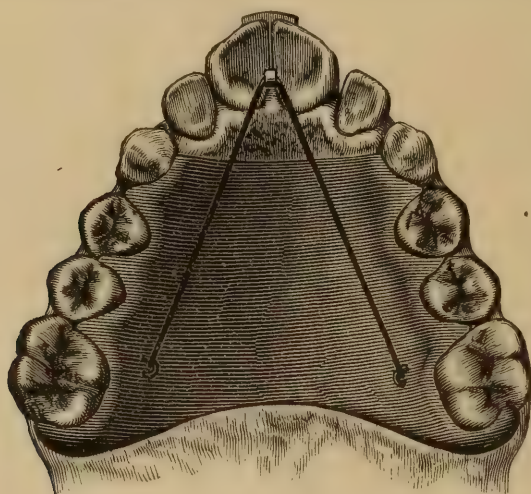


FIG. 1.

be done by a fixture under the lip or cheek, it is not so desirable a method as the use of a jack screw. Elastic ligatures are invaluable, however, in conjunction with a retaining plate to gently hold the teeth in their newly acquired positions.

The following engravings will illustrate some of the applications of elasticity.

Fig. 2 shows a combination of vulcanite and gold wire for bringing into line certain irregular teeth upon the lower jaw.

It was a former practice in a case like this to use the wire band independent of the plate, the ends being tied with silk or twine ligatures to the molar or bicuspid teeth; but experience showed that the ligatures were apt to irritate the gums, besides giving much trouble whenever the fixture was removed for cleansing by the difficulty of re-tying. Conse-

### *Elasticity.*

quently the wire was carried over the teeth, selecting such a gap when the jaws were closed as was most favorable, and the ends of the wire anchored in vulcanite. In this way perfect facility in removing and replacing was obtained.

Another advantage derived from fixing the wire in a vulcanite frame is the steadiness with which the wire is kept in relation to the teeth.

In drawing teeth toward a wire, rubber elastics exert a constant tendency to force the wire into some position where the elastics will not remain on the teeth, particularly the incisors and canines.

There is often apparently but one position in which the wire can be made to act as the anchorage for the elastics, and this position cannot always be obtained where the wire is only sustained by tying the ends to adjacent teeth. It will therefore be found to be far less trouble in the

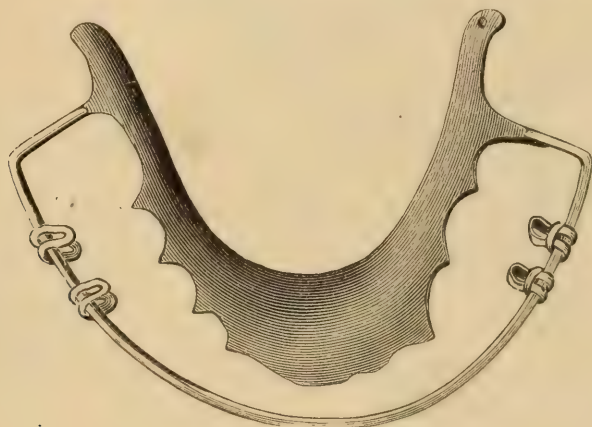


FIG. 2.

end to both operator and patient, to have the wire secured to a vulcanite frame, carefully adjusted to a position which will exert the most efficiency.

Two methods of attachment for the elastics are indicated in the engraving—with those on the right a single band of the rubber passes over the tooth; those on the left show rings cut from this same size tubing, but being doubled, and both ends of the loop being carried over the tooth, the power is much increased.

Fig. 3 shows another method of attachment for elastic rings. This fixture was used in a case where the canine teeth on the lower jaw stood outside the line, and the arch behind was somewhat narrowed.

Both the first permanent molars had been removed because of decay, and the appliance here represented drew the canines into position and widened the arch. Hooks of gold wire were inserted in the vul-

canite to attach the elastic bands more readily, and waxed silk or linen twine drew the bands forward and inside of the bicuspid, and tied them

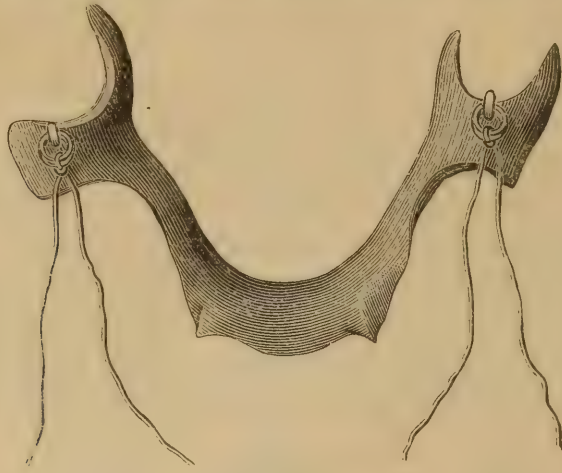


FIG. 3.

to the canines; thus the resilience of the rubber, from being attached to the plate in the position here indicated, was made to perform contrary movements of the teeth.

Fig. 4 illustrates other forms of attachment, as also a moderate degree of elasticity to be obtained from the shrinkage of linen fibre when wet.

It is frequently the case that the rapidity of movement obtained from rubber is endangering the vitality of the tooth. More harm would be likely to follow the abandonment of pressure than its continuance, but it is wiser to reduce the strain to the minimum until tone has returned to the tissues. In such cases a piece of linen twine in place of the rubber, and tied tightly, will retain all the advancement and add somewhat gently to it. In fact, in the earlier days of treating irregular-

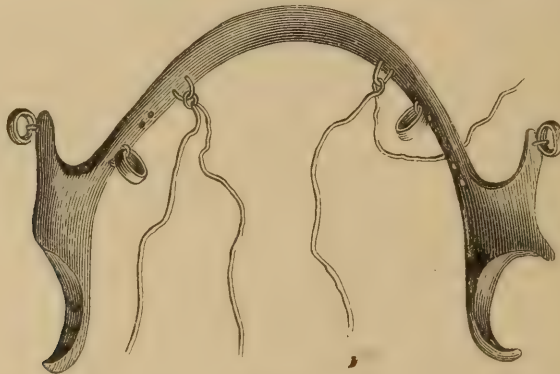


FIG. 4.

ities, and before the introduction of rubber, this kind of ligature was much depended upon.

Fig. 5 shows other attachments of elasticity under peculiar circumstances. This fixture was made to correct a bad arrangement of the four inferior incisors, and prior to the shedding of either the molars or the canines. The regulating of the incisors necessitated attachments of a firmer character than could be obtained from the loosening, temporary teeth, besides the danger of removing the canines prematurely, if strain was applied to them. Consequently the apparatus was made with wire, passing over the arch between the canines and temporary molars, terminating in hooks, as seen in the illustration, marked A A.



FIG. 5.

The elastic ligature could thus have an independent attachment outside as well as within the arch, and movements in almost any direction could be obtained. Such fixtures possess the decided advantage of being managed by the patient. Any intelligent child could remove and replace such appliances for cleansing purposes, and avoid unnecessary visits to the dentist.

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### "ELEVATION."

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By GEO. W. FIELDS, D.D.S., London, England.

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"Elevate the standard" is the cry heard on every side. Our journals seem to vie one with another as to which shall proclaim it the loudest and the most effectively; every society report contains a paper bearing either directly or indirectly upon this subject, while almost every government, by means of the pressure brought to bear upon it through the influence of the dental profession, has been induced to put its legislative hand to the good work.

In the Paris University a "Dental Chair" has been established.

After October, 1877, candidates for the L.D.S. degree, conferred by the R.C.S. of London, will be compelled to pass a preliminary examination in Arts. This latter decision is doubtless one of the best steps in the right direction yet taken this side of the Atlantic, and one well

worthy of imitation in the United States. If, in addition to this last requirement, the Dental Hospital of London would give equally thorough instruction in the practical branch of our specialty, as they already do in the theory of Medicine and Surgery, one could safely say that the London Dental School is the best in the world ; and why should they not do so, when it is an indisputable fact that in the daily practice of the specialty we rarely have other operations to perform than filling of teeth, treatment of alveolar abscess, treatment of the gums, and extraction of teeth--the first constituting ninety-nine one hundredths of the practice of every practitioner who holds any position in the profession ?

At the present time, in almost every Continental State, there is a medico-dental examination to be passed, before one can receive permission or authorization to practice Dental Surgery.

In Austria and Switzerland this examination is so rigorous, that there have been several notable instances of the D.D.S. failing to receive the much-coveted document, and, in consequence, being compelled to seek a more "genial climate" for "*health's* sake."

I cannot say that I believe this test examination will insure to the foreigners dental surgeons better skilled in the science and art of preserving the teeth ; but I suspect, once well understood in America, that a candidate or applicant for permission to practice dentistry must submit to such an examination ; it will deter from "going to Europe" many of that class who are failures at home, many of whom, in the past, have settled here, and are practicing, in out-of-the-way places, on the European reputation of the "Dentistes Americains."

In Switzerland there is a D.D.S., who is associated with a German who "has been in the United States," and they advertise *themselves* as "American *Dentists*."

This question frequently presents itself to my mind : What is to be the result of this agitation of the subject of Dental Education, and of the demand for a more thorough medical and surgical qualification for dentists ? Is there not great danger that in our zeal to improve the standard of education, the all-important part of our specialty, viz., the preservation of the teeth, will be neglected ? May not a good dentist be spoiled, to produce only an inferior surgeon or physician ? While encouraging students to acquire a more thorough knowledge of the principles and practice of general medicine and surgery, we should also deprecate any tendency to neglect, in the slightest degree, that *specialty* of our *specialty* which distinguishes the practical dentist from the *physician and surgeon*. Four years ago a few Americans thought to "Elevate" a

little, and, with this object in view, ascended the Rigi into Suisse, and there organized a Dental Society on a higher level, and farther withdrawn from the "vulgar herd," than any other society, save, perhaps, the "*Society of Surgeons who condescend to practice dentistry*," in London. This highest society took the appropriate name of "The American Dental Society of Europe," and one of its members had the temerity to state in a letter that "one of the objects of this society shall be to elevate the standard of American dentistry in Europe," or words to that effect. These few words, so innocently uttered, drew forth a most severe criticism from the pen of "Vagrant." So severe was the criticism, that one ignorant of the honorable position which the critic occupies in the London or English profession, might suspect that he had an inward consciousness of the need of "Elevation," but objected to the means, there being a foreign element in it.

Had "Vagrant" known something of the organization he so heartlessly attacked, he would not have written as he did—for the "*causus villi*" would have been wanting—and more, the blood of Switzerland's adopted son would not have been made to boil with honest indignation, and the "dickens" would not have been to pay. A few words here will prove how erroneous were the impressions made upon the mind of "Vagrant" by the words above quoted.

As stated by Dr. Wright, the "A. D. S. is not a Missionary Society" (even if there *is* a field for such a work), at any rate not to foreigners, for we are well aware that there is enough "home" work to be done amongst ourselves.

The one fact, that no foreigners other than those holding the American degree are received into membership, must be conclusive evidence to an unbiased mind that this Society aims only at "mutual improvement of its members," and they are mostly Americans; this Society is almost as exclusive as that of the "Condescending Surgeons."

Ignorance of this simple fact would have been sufficient excuse for his remarks, had it ended there—but after the grand fulmination of criticism on the name and purpose of the Society, he was not contented. In the March issue of the Johnston MISCELLANY, he says: "I cannot see how the discussion of a few time-worn subjects are likely to raise the standard of dentistry, *even* to the position which it occupies in America."

To say nothing of the relative standard of dentistry in Europe and in America, I would ask if the associating of intelligent men is not one of the most powerful levers that can be applied to this work of "Elevating," even though they do not invent some new subject for discussion

each time they meet (and this Society is not singular in their weakness for old topics).

Our Society is a new one, organized under many difficulties, with a membership made up principally of men in full practice, who, since their arrival in Europe, have been completely shut out from all professional association; as a consequence, their whole attention has been, perforce, given to the practical part of our specialty—"by their fruit ye shall know them." Under these circumstances, can it be expected that they shall suddenly prove themselves the equals in scientific discussions of those FEW individuals whose lives have been spent in study and investigation, and mutual interchange of thought and work, under the most favorable conditions?

Give the American Dental Society of Europe a few years' trial, then if it proves to be sterile of results creditable to the profession, turn it out as a failure—but until then, let it alone.

May we hope that "Vagrant" will give us as freely his opinions of the "Society of Surgeons Practicing Dentistry," as of the "A. D. S. of E."?

Dr. Wright appears to be of the opinion that the use of the dental fee and appointment card, or any other form of presenting to the understanding of the patient the required fee for professional services rendered, is degrading the profession to the level of mechanics and trade. In this I cannot agree with him.

Full and adequate remuneration for services rendered is in no sense degrading to the profession, nor humiliating to the recipient; but I am convinced that a low, unremunerative fee is one of the greatest obstacles to that "Elevation" standard of excellence in operations now so desirable. To-day the people this side of the Atlantic, as well as some worthy practitioners, are suffering from the want of remunerative fees.

The conventional fee of the Continent (a Napoleon, 20 francs), and the guinea (21 shillings), of England, is what is given and accepted, and this cast-iron fee produces its radical results—viz., quick operations, and *see* three times as many patients per day as one ought, in justice to either patient or operator; and this must be done in order to make an income.

There are few who will spend an hour or two hours over an operation or in treatment for such a pittance of a fee, while he is sure of the same fee for a half hour spent in operating more simply, or extracting the troublesome tooth.

Dr. Wright remarks, in support of his argument, that physicians have

no fee card. This is true, but it is understood that, according to his merit and skill, he is to receive his half, single or double fee (the conventional fee of each country being taken as the standard per visit. Again, he does not spend the time that the dentist is compelled to, if the latter operates conscientiously, nor are his professional services of as varied a nature as are those of the dental surgeon. The surgeon receives a fee according to his reputation and skill, the oculist the same, also the *accoucheur*, but it varies with each class of operations, and is cheerfully paid.

By the mass of the people dentistry is still looked upon as little better than a trade, *un metier*, and not without some show of reason: for it is practiced by the majority of those styling themselves dentists simply as a means of making money, by hook or by crook: and there are also many more of no mean ability too modest to demand a commensurate fee, who feel compelled, on account of the utter lack of appreciation on the part of the public, to trade in their skill and resort to many unprofessional and undignified tricks in order to increase their income. One must either submit to the mere pittance of a fee as established when teeth were *pulled* with the key, and *stuffed* with amalgam (if the cavity was larger than a small shot); or do the disagreeable with each patient, and sell his skill and gold in the same lot; or, last and best, have a modest "fee card"—not one setting forth the unequalled skill, surprising cheapness, and marvelous painlessness of operations—to hand or send to each patient at the time of making the appointment.

This may be done without sacrifice of dignity, and yet secure to the dentist a fee which will enable him to give his highest skill to the patient. Our patients come to us, or should come to us, with as much confidence as they consult their physicians, and expect that we shall in good faith, according to our individual ability, devote our best efforts to the treatment of the case presented; but I fear, without the encouragement of a remunerative fee, few men are so conscientious as to apply the most efficient treatment, if it involves too great an expenditure of time and trouble; and this indifference to the rights of our patients is more degrading to the profession than any fee card I have yet seen.

I prefer the "appointment fee card," and my experience with it has been such, that I would retain it until my *clientes* should be educated up to the standard of appreciation and remunerative fees, though by the highest authorities pronounced unprofessional.

Since writing the preceding lines I found the following in a medical journal:

“There are not less than fifty physicians in Savannah, of whom there are three Homœopaths and two Thompsonians, and they have a medical tariff.

“Each visit, operation or treatment is there tarified according to its importance. Simple visit to a *resident*, two dollars; a non-resident, five dollars; visit on board a ship during the day, five dollars; during the night, twenty dollars; an ordinary accouchment, fifty dollars; with complications, one hundred dollars; Cæsarean operation, five hundred dollars; arm amputation, fifty dollars; leg ditto, one hundred, etc., etc.

“These rates are always the minimum; they may be increased, according to the importance of the case, at the discretion of the physician or surgeon; and a notice at the head of the card advises the patient that the account will be sent in every month, or at the conclusion of the attendance. This system is satisfactory to the doctors and does not appear to be less so to the patients. We should be glad to see something similar introduced into England, especially the portion respecting the more frequent presentation of accounts. The long credit system is the bugbear of almost all general practitioners in this country.”

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## SUPPLY AND DEMAND OF DENTISTRY.

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By S. B. PALMER, M.D.S., Syracuse, N. Y.

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Dentistry, as a profession, is of recent origin. What may be its achievements in coming time is mere conjecture. There is a demand for deeper and higher attainments in the scientific department, in order that we may more thoroughly understand the laws of nature respecting the growth and development of the dental organs, and recognize as the highest mission of the dentist to offer preventives for evils for which he now only attempts a cure.

Without farther speculation in reference to the future, let us consider another and most important demand of the present—one quite within the province of the profession to supply—namely, “Cheap *versus* poor dentistry,” or dentistry for the masses. I am well aware that this subject may be considered unpopular, at least by the vanguard of the profession, yet the demand is imperative, and the time has come for the profession to furnish the supply, more especially since dentistry is regarded as a specialty of medicine. All who have the prosperity of dentistry at heart, who, by teaching, investigating or practice, have aided in bringing it to

its present honorable position, must feel cheered by the accomplishment. This progressive movement, however, has been the direct cause of a demand for which, at present, there is no supply—at least so recognized by the profession.

It is a well established principle that knowledge and skill ever command reward, which is signally true in the practice of dentistry. Skillful operations are reliable recommendations to a remunerative practice, and not unfrequently charges themselves are taken at par for the standard merits of the operator. Dental colleges, literature and societies, all stimulate the student to higher aims and practice. Thus progressive or professional dentistry occupies one extreme, while the other embraces all that bears the name or seeks shelter under its title. Year by year these distinctions become more apparent, as the college graduate and office student usually practice according to instruction received.

Dentistry is divided into two departments—operative and mechanical—the latter often constituting the main practice of the uneducated dentist, and is often conducted in a manner that calls for more expressive terms for the specialties; preservative and destructive dentistry would often better name the departments.

The dentist has to deal with important living organs of the body. Nothing short of an education as exacting as that demanded for the dental graduate can prepare a student for practice.

I wish the above statement to be remembered, lest, by the following, I may be charged with suggestions calculated to lower the educational standing of the profession. It cannot be denied that there is a demand for dental services at prices far below those charged by almost any competent operator.

I bring no charge against dentists for exorbitance. As a class, I find as much benevolence manifested to aid the unfortunate as in any other profession. This, however, does but little towards supplying the thousands who, as needy, never come to notice. I am not advocating the establishment of a dental dispensary for gratuitous operations, but a recognition of a truth, that people of limited means have rights that the profession of dentistry is bound to respect. Let any one reduced from affluence—the poor mechanic, the factory girl or house servant—apply for dental operations at one-half the usual charge, can the services of a recognized dentist be obtained except as an act of charity?

It is a fact, that a large portion of the laboring class employ dentists unrecognized as such by the profession, and often unqualified for practice, simply because their limited means will purchase no better service.

“What are you going to do about it?” might be a pertinent question. So long as price and material mark the distinction between dentist and quack, there can be nothing done about it. Cheap dentistry and cheap material are considered degrading to the operator and the profession. This is made the visible standard by which to judge of the merits of an operator, and is the natural outgrowth of a laudable effort on the part of the profession to prevent quackery. This principle is a part of the education of the student; he must maintain the honor and dignity of the profession; if faithful to the charge he is shut out of the realm of cheap dentistry; yielding to the rights and demand of a deserving public, he no longer enjoys the protection and cheer which are afforded by professional intimacy. In dentistry, as in other occupations, actual necessity stimulates inventions. It has been asserted, upon good authority, and is so recorded in the writings of the past year, that teeth can be, and are, preserved by fillings other than gold at much less expense. If this be true, there ought to be a *professional* channel opened, whereby those who have not the means to procure a higher style of practice may receive the *preservative* benefits of the latter from competent hands.

There is a demand for just this class of dentistry, and there are hundreds of young dentists, and others of experience, whose circumstances hedge up the way to first-class practice, who could and would gladly furnish the supply but for the sentiment against it. Skill and experience will ever command their reward, and we make no point against individual practice or high charges, but insist that patients in moderate circumstances have a right to demand of the dental profession operations suited to their means.

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## SINGULAR CASES.

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By J. H. BURNETTE, Saint Johns, Newfoundland.

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### NO. I.—INVERTED WISDOM-TOOTH.

The other day a medical friend of mine brought me a patient who, he said, had been suffering for more than twelve months from necrosis of the lower jaw. Upon examination of the mouth, I found a fistulous opening about two lines below the *ductus stenois*, with a copious discharge of pus running out of it continually. The first step in making my diagnosis was to count the teeth. I found them all there and healthy, with the exception of the *dens sapientia* on the left lower jaw. The absent one, in my mind, accounted for the trouble at once. Upon the

strength of this opinion I made a deep straight incision into the gum over the seat of the trouble, and then a transversed incision, laid the flaps back and revealed to view the missing tooth completely inverted, the apex of each fang badly necrosed, while the crown was intact. I with some difficulty extracted, and then chipped off the alveolus that was diseased, gave the patient the following mouth-wash and discharged him for the time, asking him to call next day.

*R.*     Acidi Carbolici, one drachm.  
           Tinct. Opii, one-half ounce.  
           Decoc. Cinchonæ, one ounce.

*Misce.*

I used the above also to syringe out the parts daily, and after two weeks discharged the patient well.

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#### NO. 2.—SALIVARY CALCULUS.

A short time ago a married lady, about thirty years of age, came to my office, upon the advice of her family doctor, to consult me in regard to a "*peculiar growth*" on her teeth. The result of this "*peculiar growth*" was months of suffering and deformity, coupled with attenuation, loss of appetite and sleep. When I saw the patient first, she was, indeed, a sorry sight to look at. Her story was, "that the *thing* had been growing for over three years, and continually getting larger"—so much so, in fact, that she could not lie on that side. The moment I examined the mouth, the cause of the trouble was made clear.

Firmly attached to the first and second molars, on the left superior jaw, was a piece of tartar about the size of an English walnut. This immense accumulation had, of course, proved a most dangerous enemy to the surrounding soft parts and the alveolar border. In fact, from the canine tooth in front, to the *dens sapientia* posteriorly, there was a mass of necrosis and ulceration. It was easily detached from the healthier parts. I was obliged to remove the three molars, and all of that part of the alveolar process from the canine tooth to the maxillary tuberosity. Very little hemorrhage followed the operation. I syringed out the parts daily with a weak solution of *carbolic acid*, advising a tonic and dietetic course of treatment. In a few days she was able to return to her home, a distance of about fifty miles, perfectly well. I have sent you a brief history of this case, as it seems to me unusual. I have never seen or read of such an accumulation of tartar before. I have the largest piece now in my cabinet, and value it as a great curiosity.

## THE BORDER-LAND OF INSANITY—WITH EXAMPLES SELECTED FROM AMONG THE ILLUSTRIOUS INSANE.

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By EUGENE GRISSOM, M. D., Superintendent of the Insane Asylum of North Carolina, Raleigh.

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[From *Virginia Medical Monthly*.]

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Between the kingdom of Genius and the habitation of Madness, there lies a strip of unknown breadth, which we may term the Border-land of Insanity. In this Border-land have dwelt great numbers of the marked men of their race. The history of those of our fellows who have had glimpses into the greatest glories and the most frightful sorrows that may befall humanity, has for us a fascination beyond the wanderings of a Livingstone in equatorial wilds, or a Kane amid the frozen secrets of the arctic North.

Philosophers have delighted in distinctions between what they call the faculties of the mind, for the want of a better term. Thus they name the power which receives and registers impressions from without, by means of the senses, *Perception*; the power which compares these and reasons upon them, *Intellect*; the power which is capable of response to outer influences and circumstances, *Emotion*; and the power which, in turn, sets in action the answer of the mind, the *Will*. But these are names after all, and a mere approach in expression to such and such a capability of the mysterious being within us—the one and really indivisible essence which we call the immortal mind.

I must repeat some facts so well known as now to be simply truisms; but these statements are indispensable in their relations to the conclusions to which I invite attention.

The instrument with which the immortal part within us reaches the material world is the human brain. Thousands of facts tell us that from that centre, through the nerves of special sense, and also from the spinal cord, by numberless minute branches of nerves to the remotest parts of the body, go the telegraphic wires which bear the mandates of the mind.

There has arisen at this day a school of philosophers who aver that the mind is the mere secretion of the brain—a force and nothing more, expended in the act, created anew for each operation, and necessarily dying with the body that gives it existence, in the dreary death of annihilation. This specious philosophy, this glittering solution of the complicated phenomena of the mental world, making men the automata of phys-

ical force, when pressed to its logical end knows no conscience, no right or wrong, no Divine law, and, indeed, no God in all the universe—only the likes and dislikes of atoms, and the blind whirlwinds of physical attraction. This dream—for it is only a dream—is spread over the length and breadth of the land, in our papers and magazines, in cotemporary addresses and poems, and is supposed to be entertained by many gentlemen of eminence in the medical world. It has perhaps become necessary for the protection of the young, to show that the faith of our fathers is impregnable, and founded on the rock of truth.

The mind that dwells within us is a spark of the Divine essence, destined to a life beyond the grave. Did I say that the nerves were the telegraphic wires of the system, and the brain the central battery? True; but the operator is the Mind, separate and independent from the machinery at its command; and the battery, while sending forth currents of influence to the farthest wires when the connection is unbroken, gives the jangle of unintelligent motion until the directing power of the operator impresses thought upon its quiverings, or direction upon its force, and registers his will in intelligible language. But if the wires are suddenly broken, or slowly rusted away; or if, in the lapse of time, the currents of the battery grow feebler, and die away finally for want of the feeding acids and metals, the play of whose mutual action is transmuted to electric force; or if the lightnings of heaven seize and for awhile range these wires with uncontrollable force—in any and all these cases the operator stands powerless to express his will. But he is nevertheless still existent, and if the damage be not irreparable, he is ready to resume control, so far as the delicate apparatus is re-adjusted and re-connected, and supplied again with the pure and efficient pabulum of its operations.

The proposition I assert is, that there is no such thing as a diseased mind, where the body is in perfect health, implying the brain natural in size, unaffected in its structure or functions by disease, and supplied with pure blood, unvaried by excess or diminution. The *mens sana* always resides in *corpore sano*.

Let any one of these conditions be destroyed by imperfect organization of the brain at birth, or by mechanical injury to its vessels, whether by violence or disease, or by poisoned blood circulating through its structure, and there comes a period when thick clouds envelop the spirit, and obscure mental appreciation, or even directly interrupt its every-day intercourse with men and things, and by degrees and insensible shades, the man drifts into the catalogue of the insane.

We cannot too distinctly realize that insanity is purely a physical dis-

case, and as such calls for sympathy and care, and restoration, if possible. The time was when insanity was regarded as the possession of demons. As, in the dark ages, the hospitals were attached to the monastic establishments, it was not unnatural, in one point of view, that the discipline enforced among the monks for evil words and deeds should be applied to the wretched patients committed to their hands. Hence, among the Franciscans, who enforced severe self-chastenings, each miserable lunatic received ten lashes per day to drive out the evil spirit. Stripes, chairs of restraint, tortures equal to the direst imaginations of the Inquisition, bleedings with the lancet, whirling chairs whose gyrations reached a hundred revolutions a minute, iron cages suspended by chains over tanks of water so that the victims might be submerged to the neck—this frightful picture, which I will not further pursue, presents the system of treatment for these unfortunates, lasting even to 1790, over a great part of the civilized world.

But, by the efforts of the wise and good, men have learned to know that this mysterious possession that for centuries blasted its victims, and set them apart from their fellows as the objects of wrath, or the playthings of devils and demons, was but a disease—one of the ills that flesh is heir to. Like other afflictions, sometimes insidious in approach, sometimes bursting on the sufferer with terrific suddenness, it is nevertheless, like them, a condition to be accounted for on a physical basis, preventable within certain bounds, and its cure, blessed be Providence, also possible, and even probable, with favoring circumstances.

Can the mind suffer disease? Then it is pierced with mortal taint and will surely die, beyond hope of resurrection. Thousands of men come back to life and happiness, after even what some would call the death of mind. Why are they not new men, if the soul is a secretion of the brain? How is it possible that each man comes back to his own identity? Who has ever found himself or recognized another as a new being gifted with a separate and independent mind after the passage through a season of lunacy, even of years? Voice, expression, language, views, tastes, education, whatever individualizes or differentiates one man from another, comes back to stamp him as such a creature of God, his Maker, and no other one.

What constitutes insanity and how the change occurs, I will not attempt to discuss. Hardly any two agree to-day upon precise distinctions in the former case, and the latter is yet an unrevealed book. But we do know its indications and accompaniments. Under ordinary circumstances, it is not the work of one generation. By this it is not meant that

the parent must necessarily present the phenomena that we recognize in this disease, but he prepares the way for its development. And this he may do in a great many ways, but chiefly by abnormal and unnatural modes of life. He may gorge the brain with stimulating drinks for years; he may narcotize it with tobacco, or excite it by the fever of gambling at the card-table, or in the chances of speculative business; he may neglect the dictates of a reasonable hygiene, and give his life to mental exertion, keeping the brain filled with blood to its utmost endurance, in the intent study of an idea, forgetful of the needs of physical exercise; he may abandon himself to sensual excess, or neglect the demands of sleep, or pursue the rewards of political ambition, or the vanities of social extravagance, until he has no life to transmit his offspring, except that which carries with it impaired force and defective structure.

It is a startling fact that this is the sin of the age—excess in one or many of these forms in this era of rushing social currents and conflicting destinies, and day by day retribution strikes her knell. One man is paralyzed; another is on the couch of a babe with profound nervous prostration; another is epileptic; another falls under the lightning stroke of apoplexy, like Dickens, or dies, like Horace Greeley, the victim of insanity; while others again slowly drag out an intellectual night like that of the poet, Joseph Rodman Drake (author of the exquisite *Culprit Fay*, and for so many years past an inmate of an asylum), while others (in the words of a maniac himself) dwell in a land where

“There is a winter in my soul,  
The winter of despair;  
Oh, when shall Spring its rage control?  
When shall the snowdrop blossom there?  
Cold gleams of comfort sometimes dart  
A dawn of glory on my heart,  
But quickly pass away.  
Thus Northern lights the gloom adorn,  
And give the promise of a morn  
That never turns to day.”

Insanity appears to require both predisposing and exciting causes, where it is not the result of overwhelming violence to the brain. The great predisposing cause is left a heritage somewhere in the ancestry of the child. Thousands of years do not obliterate the Jewish nose; the Mongolian eye remains; the fair skin of the Northmen transplanted eight centuries ago to secluded valleys in Italy, is yet preserved; nay, such a trifle as the Bourbon mouth is retained for centuries. Who does not see the stamp of parentage in expression, in the very shape of a nail, or tone of a voice? Who can doubt that there is at least a similar tendency to transmit the acquired conditions of the brain and ner-

vous system; and the more so as this, of the whole frame, is the most impressible portion?

Just what changes in the structure of the brain invite the access of insanity it may be impossible to tell. Sometimes there are enormous abscesses within its substance, or areas of hardened or softened convolutions; again, it is studded with minute points of tuberculous or dead material; or there may be but the faintest blush of inflammation; not unoften the lesion defies the naked eye, and only after the brain has been artificially hardened, and a thin paper-like slice rendered transparent and colored with carmine, and exposed to long examination under the microscope, do the minute degeneration of its tissue, or the enlargement and false arrangement of its circulating vessels, betray themselves. Yet the difficulties here, as brave and industrious as pathologists are in the struggle to surmount the obstacles, are by no means greater than those which confront us on the threshold of inquiry in many diseases, and indeed in the final recesses of every physiological operation. What we call disease is, after all, but a collection of manifestations we term symptoms hardly absolutely alike in any two cases.

If I must ask you to follow me through the devious ways of philosophers in explaining the road to the goal I would reach, it is that I am ignorant of other modes of approaching it.

We have spoken of faculties, for convenience' sake entitled Perception, Intellect, Emotion, and Will. Let us briefly trace the successive involvement of these, in the production of insanity.

Through *Perception*, the mind takes knowledge of the objects around, and with the aid of memory, marshals them in their absence into a conception. Unreal perception is illusion—the first step away from just observation and conclusion. This is as common as the affairs of every-day life. Any disordered sense may give rise to it. To a jaundiced tongue all things are bitter; in certain affections of the ear, bells are ever sounding, or waves roaring. We pass along a road at night, and are suddenly startled by a white milestone, which assumes the shape of the white-robed ghost of our childhood. Reason soon assures us that this is a momentary dazzle and disturbance of the sense of vision from its true work. But in some lives, illusions by thousands checker and disturb the whole course of existence. Let us go patiently on to observe.

A *conception* of an absent object is the revived impression which has been preserved in whole or part by memory. So a hallucination is an illusion that reason does not dispel; but which hangs about the mind seeking admittance into the domains of admitted truth. If we do not dis-

miss the momentary sight of the ghostly milestone as the glare of disturbed sense, but fly before it, and every moment turn to see it pursue, we are the victims of hallucination. That which more distinctly illustrates hallucination as disordered conception, is the striking fact that men whose eyes are out may have hallucinations of dread visions before them, and so of the other senses.

Perhaps the hair's breadth between the excitement of the sane mind and the beginning of the insane condition lies somewhere here ; the one may still compare his hallucinations with past knowledge, and refuse to accept their dominion over him ; the other may submit without question, and be lost. Yet, the question has been asked, can the mind be both sane and insane at once ?—can these hallucinations ever be the legitimate children of a mind perfectly normal ?

The next downward step is to absolute delusion. If, pursued by the spectral hallucination which we have described, we some day, in uncontrollable weariness and despair, turn and strike down the monster by our side, and so unwittingly destroy a wife or a child at our feet, fixed delusion has done its work, and henceforth we are numbered among the host of maniacs. Who shall say where the subtle line was crossed ? Who shall say what under-current of life drifted us into that maelstrom ?

The lamented Greisinger affirms ideas which, briefly stated, show that those whose fate it is to be stricken with a hereditary disposition to this disease, turn imperceptibly to crooked paths which lead only downwards ; their cerebral actions are different from those of the majority of mankind. The impressions of the outer world impinge upon an abnormally excited centre ; uncommon conditions arise, unnatural dispositions are excited ; by and by active irritation sets in ; a tendency to weariness follows ; imaginations which are for the moment the passing whims of healthy brains are cherished and maintained ; by and by the dark and bitter side of life is all they see. The brain disease becomes fixed, its results are reflected in diminished and perverted nerve power throughout the system, and so, by impoverished blood, back again to the fountain head in circling rounds down to helpless dementia.

It is not the least extraordinary fact, in this curious subject, that what are called the primordial delusions of insanity are so well defined and constantly repeated. The famous man from whom I have quoted ascribes such recurring delusions, not to emotional foundations as their source of production, but rather attributes their direct origin to cerebral disturbances. He beautifully illustrates, by comparing this with the contrast of the walk of the man in health, and that of him whose nerve force in

the spinal cord has been impaired by disease: "As the ganglion-cells of the spinal cords work together in the most exquisite manner, receiving exact sensitive impressions of the floor as touched by the foot in a regular motor manner, making complete harmony, so by such disease as shows anomalous action of the cells, there is produced, whatever may be the effort of the will, such a walk as exhibits the fatal mark of want of harmony." This occurs in some of the most intractable cases that affect the frame of man.

By complete analogy, the processes giving rise to imaginations, take place in the ganglion-cells of the outer surface of the brain; in the normal state, these actions, though numberless, work together in beautiful regularity; but by the anomalous action of the cells of the cortical substance of the brain, words and imaginations appear without a real existence.

We shall find that the great of this earth have often been the unhappy subjects of the most cruel hallucinations, and even the victims of confirmed delusions, ending not unoften in outbreking mania or lingering melancholia. We shall find, to the confounding of those who would ignore the nobler part of man and reduce mind to the level of a material secretion, that sages, philosophers and poets have given their grandest productions to the world between the attacks of disease, and during the interval, as it were, when the veil was withdrawn and the bars broken down that resisted the control of the immortal part over the poor frail shell that subserves its uses in the fleeting present of this life.

I would not rashly say that all the great names to which I shall presently advert must be placed upon the rolls of the undoubtedly insane; but I will aver that there is not one whose life does not show at some time the evidence of perverted or impaired cerebral force. And in proportion as we discover a tainted parentage, a badly trained childhood, an intense mental strain, or extraordinary physical excess or disturbance, just so far may we trace their wanderings into the mysterious Border-land that I have described—the realm where Genius and Madness rule with divided sway. In the language of Erskine, "To constitute insanity, it is not necessary that Reason should be hunted from her seat; it is enough that Distraction sits down beside her, holds her trembling in her place, and frightens her from her propriety." It is Lord Brougham who declares that "the inability to struggle against a delusion constitutes unsoundness of mind." And in regard to partial insanity, he affirms that the disease is always present, and only not apparent by the accident that the proper chord is not struck at the time. It has often been pro-

posed as a test, that it is indicative of the affection that there be a delusion, if but rarely manifested, and a state of mind incapable of mastering it.

Hallucinations take possession when the reason, having a cloud before it, cannot correct the misapprehension of the lower senses. "It is a state of ideal intellection," says the celebrated Prof. Ordonaux, "in which the reason, after long struggling to maintain its ascendancy over the judgment, has finally yielded, but after yielding can still apprehend and compare correctly the relation of things. Thus even the insane rarely have hallucinations of more than two senses."

It is a pregnant fact in this connection, that the original basis of hallucination is often prolonged reverie. Perhaps it is of little consequence whether the cerebral fullness that gives rise to disordered brain action be the result of congested brain without voluntary effort, or the sequel of long continued voluntary and strained attention, especially if the blood vessels by inheritance have been weakened to the point of yielding. The melancholy result is the same. Long ago Aristotle said: *Nullum magnum ingenium sine mixtura dementiæ*; and this has been a prolific text. Some writer, indeed, has ventured the observation that "all who have been famous for their genius, whether in the study of philosophy, in affairs of State, in poetical composition, or in the exercise of the arts, have been inclined to insanity or epilepsy, or one or the other of these diseases has existed in the same family."

I will ask you now to consider with me some of the innumerable men of power or of genius who have signally exhibited the fate of humanity when hallucination or delusion leads it away into the Border-land of Unreason.

Charles IX of France, the impotent boy whose name ruled France, under the sway of his mother, goes to the Castle of Blois to welcome the Protestant Chieftains after long and useless civil strifes. He agrees to the marriage between his sister, Marguerite, and Henry of Navarre, his cousin, and cries, "I give my sister in marriage, not only to the Prince of Navarre, but, as it were, to the whole Protestant party."

The scheme effected, and the Protestants safely ensnared in the city of Paris, upon the occasion of the wedding solemnities, the wretched boy gives the signal to the alarm bell that tolls two o'clock on the morning of Sunday, 24th of August, 1572. Old men, terrified maidens, helpless infants, venerable matrons—all are stricken down in their blood. Trembling at the very sound of the deep echo to the alarm, he cries out to stop, but too late. Beacon fires have lit their baneful glares, and alarm bells

are sending the signal to the remotest corners of France. Recovering from his terror, fury seizes him, his eyes glare with frenzy; he shouts to the assassins, and grasping a gun, he joins the work of death, shooting from the window of the palace the wounded and the flying. Torches are held on high, that his own body-guard may slaughter in the very court yard of the palace, the fugitives who stream to the King for protection. "Let not one Protestant be spared to reproach me!" was his mad shout. What pen can ever picture the terrors of the massacre of St. Bartholomew, which spilled the blood of a hundred thousand Frenchmen! The world was struck with horror. Geneva, to this day, commemorates it with fasting and prayer. Elizabeth hung her court in mourning. The pulpits of Scotland rang with the tale. John Knox declared, "Sentence has gone forth against that murderer, the King of France, and the vengeance of God will never be withdrawn from his house."

And the day of retribution did speedily come. The echo of the world's indignation was in the heart of Charles. He, who had, with sublime hypocrisy, told Admiral Coligny, when suffering from an assassin's wound: "Father, you received the wounds, but I the sorrow;" and yet who had seen that venerable body dragged through the streets three nights after, and hacked to pieces in his very presence, was overcome now—not by the fear of man, but with a frightful, indescribable, nervous horror. Everywhere around him he saw the spectres of the gory slain, showing their gaping wounds and attended by threatening demons. He became morose, gloomy, and finally completely silent. He left all society, and month after month the scorpion fangs of remorse gnawed his heart. Finally, his very bed-clothes were crimsoned with a sweat of mortal agony. His aspect of profound misery drove off all human companionship. He groaned and wept and forever cried, "Oh, what blood!" He is deserted by all but his nurse, and he calls out with despairing eyes, "What blood have I shed?" and dies—cut off at twenty-four. The very courtiers turn away from a corpse so accursed, and but three gentlemen in all France are found to accompany the body to its tomb in the vaults of St. Denis.

*(To be Continued.)*

MEETING OF THE FIRST DISTRICT SOCIETY.\*

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AT THE RESIDENCE OF DR. GROUT, NEW YORK, JAN. 2D, 1877.

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The Secretary's minutes of the last meeting were read and approved.

Dr. Atkinson reported that the clinic to-day was a success, about forty members being present. Dr. Bodecker filled the right superior bicuspid anterior proximal, using Packs gold, No. 4, cohesive.

Dr. St. George Elliott filled the superior left second molar posterior proximal, using Buckingham's plugger attached to White's engine; filled with globe foil, Nos. 2, 4 and 60.

Dr. McCollom filled a left superior lateral incisor proximal cavity with Packs gold, No. 60.

Incidents of office practice.

Dr. Robert Reynolds said: I was filling a left superior central incisor, and the patient called my attention to its being darker than the other teeth. I asked him how long he had noticed that change in the color, and he said three or four months. On Thanksgiving day he came in again, and I told him that I believed the pulp of the tooth was dead. He did not seem inclined to believe that, and said the filling that was put in was very small, not larger than a pin-head, and did not hurt him at all, and he did not know of any way whereby it could have been injured; but on thinking the matter over, he said that some 28 or 30 years ago, as near as he could remember, he was playing with a grindstone, and got struck in the mouth with the crank or handle. I opened the tooth from the lingual surface, and, of course, found the pulp entirely dead, and before I had got more than half way up into the root, it began to bleed so rapidly that I had to plug it up. The blood dropped almost in a stream, continuing for three hours, and I had to apply a styptic of sulphate of iron. Two or three days after that he came in, and by excavating nearly up to the end of the root, I could distinguish a sort of velvety substance near the end of the root, but the blood had ceased. I filled it with Hill's stopping, which is still in. By a measurement of the tooth, I should not think there was more than a thirty-second of an inch filled up. He was a man about 50 years of age. I would like to know what caused these changes that occurred in the mouth.

Dr. Bodecker said some time ago he took out a lateral from a lady, the root of which was completely absorbed.

Dr. C. E. Lattimer: I was telling a gentleman the other day about this case in Paris, which has excited a great deal of attention, the patient being fed through a tube. He then called my attention to what I had told him as to the necessity of masticating his food properly, (he being dyspeptic,) so as to get the saliva thoroughly mixed with the food. Said he: "How is it about this man that is fed through a tube; does not that knock your theory into a cocked hat?" Of course I wanted to impress upon his mind the necessity of masticating his food properly, and it rather puzzled me. Of course we know that the man could not be fed through a tube with such food as he would eat, and in their experiments before the Academy of Medicine, they came very near killing the man, because every doctor wanted to feed him to see him eat through a tube, and they fed him with such food as he was not accustomed to. I find that we often learn a great deal from the questions of our patients. They set us to thinking, and once in awhile a question from a shrewd, intelligent patient is a good thing for us.

Dr. Atkinson said he would refer to the facts, as they are known to be by all physiologists worthy of the name, that there is a power resident in the different kinds of food that we take that is capable of calling out the proper solvent of that particular article. If it is a substance like starch that is to be converted into glucose or grape sugar, it will call out a secretion of ptyalin from a certain set of epithelial cells that nature has assigned to that work. If it is nitrogenous it will only call out the mucus to enable it to be swallowed, and then, when it arrives at the stomach, it calls out a substance that will seize hold of nitrogenous substances, such as lean meats. These things are well known, and are no stumbling-blocks to us at all. The food that required mastication would not be digested if it was passed directly into the stomach. There is a preparation in the stomach for the converting of starch into sugar, but the main business of the stomach is to resolve nitrogenous food.

Dr. Odell said: An opening through the side of the root was made by a gentleman who, I think, professes to use electricity. It was for one of his students. I found just that state of affairs the doctor describes, excepting there was a constant discharge of pus, and I found that the upper portion of the root had not been cleaned at all, so we had a scirrhus effusion, I judge, from where the canal had been made. I cleaned that root, treated in the old-fashioned way; then the difficulty was, what I should do with this opening in the side. I took a piece of soft gold, unannealed, and passed it until I felt resistance, then filled it in and smoothed it around the side of the root, having cut an opening through the gum

previously. I then passed the instrument through the opening and smoothed it nicely. When this had hardened, I filled, as usual, the rest of the teeth, and he has never had any trouble with the tooth since.

#### TREATMENT OF POORLY-CALCIFIED TEETH.

Dr. Jarvis said: I apprehend that the subject, as it is stated, does not cover what was intended. As an instance, we often see teeth that are built up; the bulk is there. Originally it was, undoubtedly, a proper color. During the lapse of time it becomes, perhaps, more or less yellow. Now, then, was there ever a time when that was a poorly-calcified tooth? I think not. The nutritive process was interrupted, and when the nutritive process is interfered with to a greater or less degree, vitality is arrested to that degree, and hence the change that we perceive in this mass. The mass is ready to fall to pieces, dependent upon whatever external agencies may be brought to bear. Now that is not the same condition that we find in the case of those teeth, more commonly the inferior molars, which at the cervix we find begin to dissolve. I do not say crumble, but to dissolve, as if some agent, perhaps acid, is operating upon them—but certainly in a carious manner. It is not a uniform surface that is affected; but it is affected by way of making small holes. Now the question is, whether that was poorly calcified. I think not. I think that it was not from an arrest of the nutritive process, or life-giving material to those parts, but I think that that condition was brought about by external circumstances entirely.

I have in my remarks referred to two conditions, the first where we find cessation of the nutritive processes, and a mass of lime has been deposited there; now it is ready to be operated upon by external circumstances. The second is subsequent and external entirely. We find in children's teeth a third condition when the line of depression is really quite soft. It has been deposited there, and I hold that at the time of its deposition the life forces were normal. But there has been an arrest in that case, as in the other case I referred to. I do not think it is a poor calcification where, as I have just said, in the case of children's teeth, these lines of depression, where we find the lime salts, are ready to crumble, so that we can push it away as we can push the snow. After they have been once built up, there is, in that case, an inference that the nutritive process is removed; but the earthy matters remain there until some force is brought to bear sufficient to break down its structure, which, of course, is weakened. There is very little mechanical resistance in tooth substance when the vitality, or the spirit, is removed. Operations that have passed under my hands, and received the

best treatment I was capable of giving them, undoubtedly will pass on in many cases under the inspection of others, and many dentists who will happen to inspect those cases will judge of them very differently. One will say, "Well, I think it was an imperfect operation and has failed in consequence." Another, I hope, will agree with me, though we will all admit we make imperfect operations sometimes, though perhaps they are seldom. I believe that by a certain course of tactics the very substance of a tooth can be affected favorably, and to a very great degree with some constitutions; others you cannot affect at all. But when you have once produced one of these healthy changes to which I refer, in six months or a year everything may be turned topsy-turvy again. To begin it is just to remove what is pretty easily removed without sacrificing form too much, then build it up and hope for the best. We cannot expect such operations to be very durable, and we cannot stake our reputation on them.

A lady in Brooklyn. I had charge of her teeth from childhood, and I felt very proud of my success with them, but I depended more upon what she did from my instruction than from operating, and there was no great deal of operating to be done. The teeth, however, were excessively sensitive—peculiarly so. When she was about sixteen I had a number of operations to perform in the mouth, which were slight. She was taken sick, and passed through a very severe sickness of the nature of a fever, and when I saw those teeth again they looked very much as marble would when operated upon by acid. I felt completely discouraged, my spirits sank within me. What could I do? I did not do anything, but recommend a treatment that she herself could apply, the use of dentifrices, etc., for two years, and then I found them in such a condition that I actually could build a rim of gold right around those teeth. I found the state of circumstances that had been operating entirely changed.

Dr. Atkinson: If we are in deep water and do not know how to swim, we must sink. Calcification is not dentification nor ossification. It simply means a deposit of lime. Dentification means a deposit of lime in a certain manner, by a certain set of cells set apart for that special use, called dentioplasts. These dentioplasts are so small that they are not capable of being seen with the naked eye. Now when you have what you call a poorly-calcified tooth, it is in a condition of decay, yet having quite sufficient animal matter there. It is covered by the same fluid that acts upon it, and there is an inability to resist an acid in one case and an ability to resist it in the other. The statement proves itself as

much as that ten times ten is a hundred proves itself. Neither of them prove themselves only as means of stepping-stones to our consciences, until we have the truth revealed to us.

As to the difference between vitality and chemistry, chemistry itself is vitality. There are various degrees of vitality, and the point is to determine whether we are entitled to say that the same tooth substance, after it has once been formed so as to be apparently sound and healthy, is capable of being dissolved or softened and hardened afterwards. Now when we see poorly-calcified or well-calcified teeth, we want to understand what we mean. If we mean that we can deposit carbonate or phosphate of lime on to the teeth that will answer all purposes, that is well enough; but that we ever can change enamel or dentine that has once been hard and is softened, and run it through a softening and hardening process, is a great mistake. The teeth are built once for all. When bone has been deprived of circulation it may be absorbed and reproduced; dentine never, because the dentine-makers are used up and cuts off all the formation of dentine; so all this idea of making enamel and dentine is a misapprehension. Now we do not know enough about tooth-making and tooth-destroying to say many things practically about these matters. You may have a lack of lime; you never can have an excess of lime substance in the teeth. I know that solvents acting on the outside will act upon the enamel, and when it gets to the dentine, it will go down the dentine towards the pulp chamber more in a line with the teeth, as they were built up in the process of dentification.

Dr. Todd: There are various theories as to the production and reproduction of enamel, but the question is, What is the cause of this softening? I have often told my patients when I have filled a cavity, "Let there be friction." Friction is a good thing. There is some chemical force about it; and if we will teach our patients to do it thoroughly after we have filled these places properly, they won't have to be filled any more. The same thing occurs between teeth. Where we find this decay we find these white spots, simply because there has been something retained there in this position, that has acted on the surface of this tooth. There never would have been any decay there if there had been friction—if nothing more than the friction of a toothpick. You will all bear me witness to the fact, that where teeth did not happen to come together those teeth are sound, while those that are in contact are decayed. It is almost invariably so. Now, the great thing for us to do is to save teeth, and to know how to overcome this condition of decay. When I look in the mouth of a patient, I see that they have taken a great deal of

pains to crowd the teeth apart so as to get between them, and thus fillings are put in there far more than is necessary, it seems to me.

Dr. Atkinson: Many men have assumed that there was such a thing as a dead substance. There is no dead matter. We say dead teeth, and that is correct enough if the teeth be dead, but there is a degree of vitality still there. If your dentine is well calcified, and the enamel perfect, and the exposed end be carefully sealed up, you have a great advantage over poorly-calcified dentine and the exposed ends of the cut. Take dentine after you have polished it, and you will find that it has become as hard as enamel. The polish we see on the roots is the effect of mechanical action on the teeth.

Subject for next meeting: "The effect of disease upon the development and health of the teeth."

Next meeting at the residence of Dr. C. E. Latimer, 102 West Fourteenth Street.

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## SWALLOWING ARTIFICIAL TEETH.

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Reported by MR. WEISS to the December meeting of the Odontological Society of Great Britain.—  
From Transactions of the O. S. G. B.

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Before proceeding with the casual communication I have announced for this evening, I would like to direct your attention to a very interesting case of swallowed artificial teeth, the particulars of which I think of so much interest as to merit their being brought to the notice of this Society. Such cases are very seldom recorded, partly from the rarity of their occurrence, and partly from the disagreeable associations that connect themselves with accidents of this character. It is very desirable that such details should be published, and I think I shall be able satisfactorily to prove that in both the instances I have to record, the cause of the accident has rested with the patients themselves. The first case occurred in the practice of Mr. Joseph Blackstone, of Gloucester Road, Regent's Park.

Mrs. T., æt. about 33, accidentally swallowed the small gold plate, with mineral block of two teeth, I now exhibit. She swallowed it while endeavoring to take a pill, an operation attended, in her case, with much nausea. It was followed by great pain in the region of the cardiac orifice of the stomach; and the patient, finding that the teeth had disappeared as well as the pill, took a quantity of mustard and water as an emetic, which only aggravated the symptoms. Nausea and inability to

swallow solids followed, attended with fever, great prostration, and a continued sense of indigestion. On the ninth day an œsophagus tube was passed down the throat in the presence of Mr. Pollock, and it appeared to strike the teeth and force them through the opening leading into the stomach. This is in a certain sense conjectural, but it was followed by great relief, which, however, did not last. Much pain was felt in the left shoulder, vomiting was persistent, and the patient became greatly emaciated, so that the operation of gastrotomy was seriously entertained, as the life of the patient was endangered. Happily, on the 117th day after the accident, while the patient was endeavoring again to take a pill (the same operation that caused her to swallow the work), she vomited with more than usual violence, and threw up the teeth. Almost instantaneously she began to recover, and, under the care of Mr. Blackstone, was speedily restored to health. I am sorry that the time usually given to casual communications will not permit us to dwell longer upon this most singular accident. The work remained in the stomach 117 days, and was returned precisely in the state I now exhibit it to you.

The second case I would direct your attention to is also a very interesting one. The patient, Mr. T. D., had but three teeth remaining in the upper jaw—one central and two lateral incisors—therefore the denture was nearly a complete one, and had been worn for many years. Originally a molar tooth stood at the back, but when this dropped out, the space was filled up with vulcanite. It fitted the mouth fairly well, and could not be removed merely by the action of the tongue; any spasmodic effort, such as coughing or sneezing, might dislodge it, but not otherwise.

The patient retired to bed a little after 11 o'clock on the night of the 30th of July last. It appears that he sometimes took the teeth out upon going to bed, and sometimes allowed them to remain in the mouth. He awoke a few minutes after twelve with a feeling that he was being suffocated, and, jumping out of bed in great agony, his first impression was that he had been attacked with some description of convulsion, and he desired his wife to send for their usual medical attendant, Dr. Slaines, of Bloomsbury Square; but that gentleman being out of town, his assistant thought it best to call to his aid the nearest medical man he could find; and upon their arriving, the patient was found to be in a very anxious state; but his symptoms were attributed to a spasm of the glottis, and the idea that he had swallowed his teeth was not entertained. The patient would not believe that the teeth were in his throat, but after a fruitless search for them for nearly two hours, Dr. Slaines' assistant, who had re-

mained with the patient all the time, determined upon calling in a surgeon, and at half-past five he returned, bringing with him Mr. Royes Bell. I am able to furnish you with Mr. Bell's report, which is so complete that any addition of mine is hardly needed.

REPORT OF MR. ROYES BELL.

"I was called at about half-past five on the morning of the 31st July last, in Mr. Henry Smith's absence from town, to see Mr. T. D., who had been taken seriously ill during the night with difficulty of breathing, etc. I found a gentleman, aged about fifty, sitting in a chair, with his mouth slightly open, and a quantity of saliva tinged with blood flowing from it. He could speak but imperfectly, and in a very low voice. His face was a good deal congested, and he seemed to be in great distress from difficulty in breathing and from choking. The history given to me by Mr. Bottdrell, the assistant of Dr. Slaines, was, to the effect that Mr. D. retired to rest quite well, but awoke suddenly in a fit of choking and difficulty of breathing, and that he had gone to sleep with a large upper set of teeth in his mouth. This set was now absent, and as it was not to be found in the bed or elsewhere, it was justly concluded that the symptoms were due to the presence of the teeth in the gullet, and I was sent for. On passing the finger down the throat, the teeth were felt just beyond the effectual reach of the finger thrust down the throat as far as possible; and as the attempt increased the patient's distress, I desisted. His residence being near King's College Hospital, I went there, and obtained the assistance of Mr. Roberts, the house surgeon, who kindly came at once with me, bringing suitable instruments.

"Upon examining a duplicate set of teeth,\* we found that the shape of the gold plate helped us very materially in our efforts to extract it, as it was curved at the back part. I passed a pair of œsophagus forceps (which opened from before backwards) down, closed, and using them as a sound against the metal plate, got correct information as to the exact position of the plate, which had been slightly shifted by the attempt to get my finger under its front margin; this edge being depressed, and the back part elevated. Opening the forceps, I seized the posterior margin of the plate, and, holding it firmly, brought it up successfully as far as the soft palate, where it stuck; then giving the patient—who had borne my manipulation with great fortitude—breathing time, I removed the set from behind the soft palate without any further trouble.

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\* The size of the piece of work was  $1\frac{3}{4}$  inches from back to front, and  $2\frac{3}{8}$  inches from side to side.

“The patient was instantly relieved of his distressing symptoms, and soon recovered under Dr. Slaines’ treatment for the soreness caused by the foreign body and the manipulations necessary for its removal.

“It was of great assistance to me to be able to examine the duplicate plate, as by that means I was better enabled to judge of its size, and to take advantage of its peculiarities of shape. Fortunately for the patient and myself, it was regular as regards the teeth; the patient had only three of his own standing, and the work was free from those wire fastenings which cause so much trouble in extracting these bodies, and which fix them often so firmly in the throat. The size of the set was also favorable, as otherwise it might have gone further down the throat, where the œsophagus is narrower, and manipulation rendered more difficult. In extraction it stuck at the soft palate, and it is curious that so large a body managed to pass the irritable soft palate and its excitable muscles. I suppose he was sleeping with his mouth open, and his head placed in a position most favorable for the occurrence of this awkward accident.

“The above adds one more to the number of this class of cases, which are at once so troublesome both to the surgeon and the patient, and gives force to the recommendation of the dentist, who prudently recommends the removal of false teeth on going to bed, and whenever anæsthetics are administered.”\*

In conclusion, I may state that the denture was swallowed at about 12 o’clock at night, and not liberated until nearly 9 o’clock in the morning. I have since seen the piece in the mouth, and can testify that it cannot be liberated by the unaided action of the tongue; and I may state that it has been worn for about nine years. The smaller piece of work appears to have been inadequately secured, and I cannot help thinking that it were better that a band of gold were exposed, than run the risk of accidents of this dangerous character.

The President of the Society mentioned a case resulting in death.

Mr. Sewill stated that, within his knowledge, at least six cases of the kind had been mentioned in the “Transactions.”

Mr. Hunt called to remembrance a case where a gold plate with five teeth were lodged for six months at the lower part of the œsophagus.

Mr. Charles Tomes and Mr. A. Barrett also named cases of the swallowing of artificial sets of teeth.

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\* Mr. Roberts told me that he saw a case where some teeth with wire attachments had been swallowed, and had passed into the stomach. The patient was ordered to take oatmeal with worsted cut up fine mixed with it, in order that the wool might be entangled around the projecting processes, and the passage of the body through the stomach and bowels facilitated. I consider the suggestion a very valuable one.

## AMERICAN DENTAL ASSOCIATION.

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ANNUAL MEETING—AUGUST.

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Dr. Cassidy, from the Committee on Chemistry, furnished a paper entitled "Sleep vs. Anæsthesia," which was well received. He gave no countenance to the idea, now nowhere strongly held, that sleep and anæsthesia are in any measure alike in kind—the latter is not natural and is accompanied by greatly accelerated chemical action, while in sleep the reverse is the case. The author ventured the opinion that nitrous oxide is a supporter of respiration, if the carbonic acid which accumulates during its inhalation is freely and regularly expelled from the lungs. Hence that it may be given, when properly managed, for lengthy operations, the patient maintaining an entirely natural appearance during unconsciousness. If, however, the carbonic acid is not properly expelled, the features take on a horrible expression, as though poisoning by this gas is taking place. He strenuously objected to the use of chloroform. Dr. J. Taft presented and read a paper on "Solution," when the subject of chemistry was declared open for discussion.

Drs. D. D. Smith and Wetherbee discussed the peculiar advantages and disadvantages of gold, oxychloride of zinc, gutta-percha and amalgam, the latter with reference to the effect of galvanic action between it and dentine. Dr. Wetherbee believed that certain classes of teeth, filled with amalgam, are very beneficially affected by the formation of sulphide of silver from the amalgam.

Dr. Clowes strongly advocated the separation of the teeth. Chemical action—disintegration—goes on best when the teeth are left in contact, and there is no decay except as a result of chemical action. Separate the teeth and you interrupt this process.

Dr. Mills preferred prophylactic treatment as the surest way to success—that is, to save teeth. A diseased and uncleanly condition of the mouth causes the ruin of many teeth.

Drs. Cunningham and Flagg spoke of the recent interest exhibited in the subject of electro-chemical action, and referred particularly to Dr. S. B. Palmer's experiment in this field. Dr. Cunningham had also experimented to ascertain the galvanic action resulting between dentine and filling materials, obtaining results generally confirmatory of those reported by Dr. Palmer.

Dr. Flagg found gutta-percha fillings, which are free from the action

of this cause of disintegration, anything but the "ephemeral stopping" it had been called.

Dr. Webb ascribed the great number of failures of fillings to preserve teeth primarily to the imperfection of the work done in making the fillings, rather than to acids and to the neglect of patients.

Dr. S. B. Palmer agreed that mechanical measures for preservation must be chiefly depended upon, but thought that the sulphide of silver, which is formed from amalgam, often aids in the preservation of teeth. This closed the discussion on this subject, and Dr. Sheppard followed with a report from the Committee on Dental Therapeutics, written by Dr. Brackett, a member of the Committee, and was followed by Dr. Atkinson upon the same subject.

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## ON TREATMENT AND EXTRACTION OF THE TOOTH-PULP.

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By JOSEPH WALKER, M.D., M.R.C.S., L.D.S., before Odontological Society of Great Britain.

It is with great diffidence that this short paper is presented to the consideration of this Society; as the ground is already so well-trodden, new matter can only now and then be introduced quite as the exception.

Mr. Turner, our esteemed Secretary, requested a short account of the treatment for Devitalization of the Pulp and Vessels in the Nerve Canal.

With your permission, sir, we will first treat:

- (a) On the mechanical preparation of the crowns of the teeth.
- (b) The treatment of the exposed pulp.
- (c) The entire extraction of the pulp and investing membrane.
- (d) When extraction is practically impossible.
- (a) The mechanical preparation of the crowns of the teeth.

Free use should be made with the enamel-cutter, to give solid walls, and remove overlapping curves. The walls should be so prepared as to enable the operator to introduce the barbed nerve-extractor perpendicularly into the full number of the nerve-canals. This is effected easily in the central lateral canine and first bicuspid teeth. In the second bicuspid teeth the cavity must be sloped forwards, and a large portion of the masticating surface sacrificed. In the first and second molar teeth the masticating surface must be freely cut away, not only to expose the pulp-cavity, but also the nerve-canals, as in the case of the second bicuspid, to give opportunity to introduce the fine barbed instrument perpendicularly.

Never having attempted to extract the nerve of the dens sapientiæ, or third molar, I will not pretend to explain the necessary preparation, excepting when the crown has disappeared and the pulp fully exposed to view. In cases with approximate spaces, caused through extraction or otherwise of a neighboring tooth, the operation may be much facilitated by obtaining room by means of introducing india-rubber, cotton, wool, or condensed wood, the wedging process being undertaken with care and slowly effected. The operation in these cases should be deferred for a week.

(b) Treatment of the pulp.

This should be varied according to the condition of the exposed pulp.

No. 1. In acute inflammation.

No. 2. In suppurative inflammation.

No. 3. In chronic inflammation.

No. 1. In the acute stage:

Thoroughly levigated arsenic.....	$\frac{1}{20}$ gr.
Creosote.....	2 drops.
Acetate of morphia.....	$\frac{1}{10}$ gr.

This should be introduced on wool or wax into the base of the cavity, and placed directly in contact with the pulp, covered well with cotton-wool, saturated with solution of mastic, and secured with three or four turns of ligature, or sealed with Jacob's stopping. In twenty-four hours the dressing should be removed, and then substitute a plug of wool, the base of which should be saturated with solution of mastic and the apex tipped with fifteen granules of tannic acid and one-tenth of a grain of acetate of morphia. One dressing will frequently prove sufficient, but occasionally it may be repeated with advantage, especially when more than one nerve canal is in question.

No. 2. When suppuration has set in, the cavity should be sponged well with solution of carbolic acid. If painful, acetate of morphia should be added to the solution, or tincture of aconite, after which wool with creosote should be introduced into the nerve-canal as far as practical. In twenty hours the use of the syringe may be repeated, and a dressing of creosote and tannic acid on wool applied. In forty-eight hours a barbed instrument may be introduced, and the cavity be fished by slightly rotating the instrument half a circle, for any broken-up pieces of the sheath of the vessels.

This is a most tedious process in some cases, but must be accomplished, if success is to be the result of the operation. Lastly, with a carefully prepared instrument (a fine, short broach, with suitable handle,

the temper of the steel reduced to a deep blue, and the sharp edges reduced and tapered to a fine point, and roughened by rotation on a hard piece of wood, with a new gold-file, is one of the best for the purpose). This instrument should be securely enveloped in wool saturated with creosote, rolled so as to fit the canal, and used as a piston of a syringe, applying good force in its introduction and withdrawal for twenty or even thirty times, until the fluid passes through the sinus of the alveolar process at the apex of the fang. The canal may now be cleansed with wool and pure spirit.

No. 3. In chronic inflammation apply the same dressing as in the acute stage, repeating each dressing twice; perhaps the tannic acid and masticated wool may be applied three times with advantage.

This now brings us to

(c) The extraction of the pulp, with the sheath and vessels.

In a large number of cases this can be accomplished if only patience and steadiness of manipulation be brought into exercise, by introducing the barbed instrument straight up the nerve-canal, rotating the instrument half a circle, withdrawing it whenever the sense of touch indicates that the sheath is involved. At other times difficulties present themselves, of which the following are a few of the number:

1. The shape of the nerve-canal of the tooth under treatment, the nerve-canals varying very much in shape, size and depth in different teeth, and even of teeth of the same class.

2. The shrinking and shriveling of the sheath and vessels after treatment.

3. The adhesion of the sheath to one side of the canal; frequently this takes place in the central, lateral and canine, towards the anterior wall; in the bicuspid towards the posterior wall of the anterior fang, and the anterior wall of the posterior fang; in the molars, towards the centre, leaving the outward circumference of each fang.

Lastly. The curves that various fangs assume.

The introduction of the fine barbed instrument must be governed by the difficulties of the case in question; gentle pressure towards the wall where adhesion is expected; gentle direct upward pressure when curves are anticipated, trusting to the barbed teeth of the instrument to withdraw the sheath.

Even with these difficulties, experience teaches us that entire extraction can be accomplished without pain; and nothing less than this should satisfy the ambition of moderately-skilled operators. It is the surest method to give ease to the patient and attain the future salvation of the dental organs.

(d) When extraction is impossible, when suppuration has continued some months.

Much need is there, sir, for apology in reading this paper to-night.

The only new thought is in reference to the preparation of the arsenic. This drug, to be used so as to produce only slight pain, must be reduced by trituration to a powder as fine as possible, and if so used with care, it is believed, will prove of great service to all friends practicing dental surgery.

In the discussion which followed Mr. Hutchinson said : Dr. Walker's paper seemed to open up three distinct points in the application of arsenious acid to the treatment of exposed pulp. In the first place, sensitiveness of pulp might simply cause sensitiveness of dentine ; for although they could not prove the distinct connection between nerve and dentine, they must admit that sensitiveness of dentine depends upon the sensitiveness of nerve. Then, secondly, there was the action of arsenic in the destruction of the nerve ; and, thirdly, the action of carbolic acid in the treatment of an abscess at the root of a tooth, consequent upon the death of a nerve. In the first place with regard to the treatment of sensitiveness of the dentine dependent upon sensitiveness of the pulp, a very minute portion of arsenious acid with an excess of pure carbolic acid applied on a little cotton wool and sealed in the cavity, was a most effectual means of subduing sensitive dentine. It was a very old method, and a mixture of an excess of carbolic acid with the arsenic seemed to neutralize the irritant effect of the latter. With regard to the destruction of the pulp, the way of applying arsenic to produce the least pain was to take a small piece of blotting-paper, and upon it pour 1-25th of a grain of arsenic in its dry form, and on this to put a drop of Calvert's No. 1 carbolic acid, obtained in the form of crystals. The way to procure it in a liquid form was simply to warm it ; in summer it was a solution, but at this time of the year it had to be warmed. On dropping it on the arsenious acid, it in a very few moments crystallized and formed a small solid pledge, very easily manipulated. This was carried to the tooth, and by the time it reached the place required, it could be applied as a hard mass to the exposed pulp ; but the warmth of the tooth would melt the carbolic acid, and the arsenious acid was equally applied to the surface of the exposed pulp. This was absolutely painless both in the case of suppurating nerve or of irritated nerve. If the tooth had been aching before, it would cure the pain, and in twenty-four hours would destroy sufficient of the nerve to open up a free opening into the pulp cavity. Thirdly, the use of carbolic

acid, referred to by Mr. Hunt, as curing an abscess at the root of a tooth, was invaluable. The same form of carbolic acid, perfectly pure (not in a solution in water), was the most useful way of applying it. It acted very effectually in curing abscess at the roots of temporary teeth especially, and in destroying the nerve—pumping the carbolic acid through until it appeared through the sinus on the surface of the gum; this would cure the abscess completely, and the sinus would heal up in a perfectly healthy form.

Mr. Balkwill said he should like some information from Dr. Walker as to what his practice was when he could not get the fluid to readily pass through the apex of the fang. It very often happened it would not go through, and in one or two cases he had drilled a hole right up through the apex, but he believed the fine or sharp edge which was left had proved an irritant, and the cases were not so successful as he could have wished.

Mr. Turner said it was very pleasant to hear of its being possible to extirpate a tooth-pulp without pain. He confessed that sometimes he was unfortunate enough to inflict a considerable amount in his endeavor to do so, and at other times he was very grateful when he found the patient did not suffer, but he could not claim anything like uniform success. He had tried the application of the levigated arsenic, but, he believed, without the creosote, and had had more success in getting less pain than when the usual form was employed. What particular merit there was in the levigated arsenic he did not know, unless it was more readily taken up by the pulp, or perhaps not so rough and likely to act as a mechanical irritant. He should like to know whether Dr. Walker used any special form of creosote. Of course there was a great difference between the action of wood creosote and the creosote got from minerals; the former was generally considered preferable for such objects. With regard to the cure of abscesses, the pumping was the difficulty. If one could manage the pumping, it mattered little whether creosote or carbolic acid was used. The pumping had been the difficulty with him, not what material was used.

Mr. Ashley Barrett inquired whether Dr. Walker insisted on the use of morphia as an essential, combined with the arsenic, for the destruction of the pulp; and, if so, whether he had any theory with regard to its action.

Dr. Field said the extraction of the nerve in that complete form was most admirably done. With regard to the treatment of these three different stages, he should be very glad to know what percentage of cases

proved successful. The theories were very nice, but it would be very important if they could have some statistics.

Mr. Charles Tomes said, alluding to the desirability of statistics, there was an admirable paper in the "Dental Cosmos," some few years back, by Dr. Jack, of Philadelphia, in which he did give statistics with reference to his extensive success in the treatment of exposed pulps, and the conclusion he came to was that pulps in Philadelphia were very much more obstinate and refractory things to deal with than the pulps which his brother practitioners treated and wrote of.

Dr. Field wished to add one word with regard to the devitalization and disinfection of the nerve-canal. A difficulty was found in pumping the disinfectants through the canals. He found very few cases where he could get his acids through. If the nerve-canal was thoroughly disinfected, either by carbolic acid, salicylic acid, or creosote, very few cases would give any further trouble. He believed that it depended largely on the patient, and also largely on the locality.

Dr. Walker said the principal object of his paper was to show when extraction should be resorted to, and when not. In acute inflammation he used the arsenic, as Mr. Hutchinson had said, as dry as possible. The apex of the wool was tipped with creosote and dry arsenic, and then morphia, which was first presented to the exposed pulp. He had very strong faith in the second treatment, viz., with the tannic acid. He always failed in withdrawing the nerve entire if he tried to extract after the first dressing. He first dressed with arsenic, creosote and morphia, leaving twenty-four hours to pass; then he substituted a second dressing with the creosote or carbolic acid, and the tannic acid, and found the action of the tannic acid was to strengthen or render fibrous the sheath, to make it dense and firm. He had one specimen, with the entire pulp and the two nerves of the lower molar, from base to apex, withdrawn after one dressing of the tannin. The mixing up of the subject of alveolar abscess with the extraction was only to show that he had failed to extract whenever there was suppuration going on in the nerve-canals. He found that if he fished for the nerve then, he got it in small pieces. If they wished to plug a nerve-canal when suppuration had been going on, it was necessary to pass the barbed instrument, and get, perhaps, the remnant of the sheath at the apex of the root. As to pumping, he found many cases where he could not get the fluid to pass through the sinus, even on the first, second, or third visit; but on the fourth or fifth time the fluid would pass completely through, and then was the time to cleanse and plug. Directly they got a clean canal they

must pass wool with pure spirit, and plug at once. This gave less peritonitis, less inflammation of the neighboring tissue, and much greater success in the operation.

The President then gave the thanks of the Society to the various contributors of Casual Communications, and to Dr. Walker for his interesting paper, and adjourned the meeting to January 8, 1877.

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## NOTES.

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### A Dentist Made a Marquis.

Dr. d'Oyley Evans, an American, but now settled in Paris, has lately been elevated to the dignity of the Roman peerage by his Holiness Pope Pius IX., under the high title of the Marquis d'Oyley of the Holy Roman Empire. The Doctor is the first and only American who has been so honored without losing his nationality. He is married to a Baltimore lady of Scotch extraction, who was lately on a visit to her friends and relatives in America. She was the daughter and co-heir of the late Alexander McDonald, of Baltimore, a naturalized citizen of the United States, but by birth the twenty-first and last lineal chief of clan Ronald of Lochaber, laird of Keppoch, in the highlands of Scotland, lineally descended from John I., last King of the Isles, who married Margaret, youngest daughter of Robert II., King of Scotland.

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### Medical and Dental Diploma.

Prof. E. S. Breidenbaugh, of the Chemical Laboratory, Pennsylvania College, at Gettysburg, writes the *Nation* in regard to a bogus degree agency in Boston:

In the *Baltimore American* of Nov. 22 and 23 appeared the following advertisement, under the head of Personals:

"Physicians, Dentists, &c., who wish Genuine Chartered University Degrees, can address, enclosing 10 cents,

J. R. VUILLE, *Boston, Mass.*"

In response to a letter of inquiry under an assumed name, came the following

communication, with the compliments of J. R. Vuille (the advertisement is in the name of J. R. Vuille):

"Upon receipt of \$50 in gold, a medical thesis, evidence of study or practice, and certificates of moral character, I will procure for you the degree of M.D. that will stand the laws of any State. For \$70 in gold I will send with the diploma a registration certificate, matriculation ticket, and a full set of class tickets. The degree of Ph. D. will be furnished at the same rates."

My inquiry as to the names of the Universities is not answered. We can no doubt imagine their character.

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### The Responsibility for some Dental Malpractice.

In January, 1873, Mrs. Mary Langley went into Hugh O'Riley's drug store, at Bridge and York Streets, for the purpose of having a tooth extracted. O'Riley was out, and a young man named Morris, who was present, volunteered to pull the tooth, but in doing so broke Mrs. Langley's jaw. She thereupon brought an action against O'Riley to recover \$1,000 damages. The suit was instituted in May, 1874, before Judge Neilson, and the plaintiff recovered a verdict in the sum of \$688.

The case was appealed to the General Term of the City Court. The General Term decides that the verdict was clearly against the instructions of the presiding judge, who said that the person who drew the tooth had not been shown to be in the

employ of the defendant, or allowed to act for him in his absence. A new trial of the case was ordered.

#### Fluids of the Mouth.

Dr. Hodson wisely calls attention, in the *Medical Record*, to the fact that, in any illness involving a feverish condition, the fluids of the mouth are constantly as intensely acid, as respects the teeth, as in any medicine administered by the physician, and, moreover, from the high temperature of the buccal cavity at such times, the power of these acids for evil is greatly augmented. Further, a direct consequence of these conditions is the especially rapid fermentation and decomposition of all food lodged between and around the teeth, and the consequent elimination of other deleterious acids. Dr. Hodson recommends rinsing the mouth with *liquor calcis* (lime-water), diluted according to the sensitiveness of the mucus membrane, and flavored with a few drops of wintergreen or peppermint to make it agreeable.

#### How to get Lean.

All animals which live on grain get fat, if they are healthy and have enough to eat, because the grain is full of starch, which is converted into sugar. On the other hand, all the animals that live on flesh-meat, from the lion to the weasel, from the eagle to the smallest hawk, never get fat, no matter how much they eat. If you will avoid starch-bearing articles mainly, making your diet most of lean beef or mutton, with a little Graham bread, or potato, turnip, or other coarse vegetable, with tart fruit, avoiding the sugar, butter, or other fatty matter, you will become as lean as you ought to be.

#### Tincture of Aconite Root to Stop the Toothache.

Dr. Stevens, in the *Progress Dentaire*, advises the use of the tinct. aconit. rad. in

inflammation of the gums. In case an alveolar abscess is imminent, dry the gum with cotton, and apply a drop of the tinct. of aconite. After the extraction of a tooth one or two drops, applied on a tampon of cotton, produce an immediate relief from pain.

#### Disturbance of Vision resulting from a Diseased Tooth.

Mr. Moon said it would be recollected that Mr. Pollock at the last meeting mentioned some interesting cases in which disturbance of vision and severe pain in the orbit had been relieved by the extraction of teeth, or by the removal of a stopping from a tooth. Since the last meeting he had seen a case somewhat corresponding to those related, in which the symptoms, though less severe, were evidently tending in the same direction. Three weeks ago a medical student at Guy's came to him, after suffering for five days from severe pain, which he described as being at the back of the right eye, and as increasing in intensity on any attempt being made to read: dilatation of the pupil had also been noticed. His patient wished him to extract a first upper right bicuspid, on which rhizodontrophy had been performed three years previously, after the extirpation of the pulp. Being rather a believer in the operation of rhizodontrophy in certain cases after the thorough clearing out of the pulp-cavity, he naturally looked at the adjoining teeth, and found that decay had penetrated the distal surface of the canine in front, and had reached the pulp-chamber. This tooth had been stopped with amalgam. The stopping was removed, the pulp-chamber opened up, the remains of a dying pulp extracted, and the root-canal filled. The unpleasant symptoms immediately ceased, and have not returned. This case would, perhaps, point to the advantage of sometimes extracting the pulp.—*Transactions Odontological Society of Great Britain.*

# JOHNSTONS' Dental Miscellany.

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VOL. IV.—*MARCH*, 1877.—No. 39.

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## DISCOLORATION OF GOLD FILLINGS.

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By PROF. THOMAS H. CHANDLER.

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The question has doubtless occurred to the mind of every practicing dentist, on seeing his gems, inserted with so much conscientious pains, and left shining with the yellow gleam of purest gold, after a short time return to him blackened and foul through some mysterious action in the mouth, What is it that has caused this hideous discoloration? Some suggestions have been offered, guesses merely, by various men at various times, but no one has thus far set himself seriously to work to elucidate the mystery by examination and experiment. Therefore I have undertaken to make a beginning, and go on as far as my limited time, means and abilities permit. The first thing to do was obviously to examine the sources of the gold prepared for dentists, and see if there could be any impurities therein which would partially or wholly account for it. It was found that the manufacturers of our dental foil universally make use of the Mint bars, as they are called, bullion refined at the United States Mint to the degree of from .996 to .998 fine. Some are said to use this without further refining; others, the more careful and conscientious, refine again, removing thereby the last traces of impurity, which is mostly silver, and bringing the product to the point of absolute fineness.

The question then came up, as even the gold of these re-refiners was found to become discolored, Is there anything in the processes of re-

fining gold which should leave an impurity not in the original mass? In refining, gold is dissolved in *aqua regia*, or nitro-hydrochloric acid, and precipitated from the solution by proto-sulphate of iron, or some other chemical. Commercial nitric and hydrochloric acids, of which the *aqua regia* is composed, and which are used in preference to the chemically pure acids on account of their greater cheapness, both have traces of iron, derived from the pans in which they are prepared, and particles of the protosulphate may be carried down with the precipitate, and so intimately mixed that no amount of subsequent washing and remelting will absolutely remove them. The quantity, however, would be so minute as not to be detected by an ordinary analysis, but might be found by means of the spectroscope. So small a quantity could hardly, it would be supposed, cause the amount of discoloration often seen on gold fillings.

Yet much of the soft foil in the market, when heated in a Bunsen burner to the point of melting, shows a slight, and often more than a slight reddish tinge, indicating the presence of iron.

To make a crucial test, some gold was purposely alloyed with iron to the amount of one-half and one grain to the ounce, by Mr. Hood, of the firm of Hood & Reynolds, and he had two large compound proximal and crown cavities in bicuspid teeth filled with it, using the half grain in one, the one grain in the other. The iron shows plainly in the foil when heated to a red heat, appearing of a dark coppery red. This foil is cohesive when slightly warmed, but when heated to a red heat, so as to bring out the oxide of iron, utterly refuses to cohere. These teeth were filled in September last, and to this day show not the least change, no special attempts being made to keep them clean, but if anything they are studiously neglected.

To test whether it was possible to change the color of our dentists' gold out of the mouth, every means that could be thought of was tried. Gold foil of different makers was put into rotten eggs, saliva from the mouth, grease from the kitchen sink, every foul mixture that could be contrived, and left for a period of six weeks, without effect. The gold issued from these messes pure and undefiled. Then fumes of the various gases, including sulphureted hydrogen, as being the one most likely to be present in human mouths, were tried with like effect, and the conclusion was reached that pure gold, or gold such as dentists use in making fillings, could not be discolored.

Then the thought occurred, which has before been suggested, whether, as it seems not to be the foil itself which changes color, it is not some-

thing we do to it in our handling or working it. In this connection the precaution so often inculcated not to handle our gold with naked fingers seems not superfluous, for it was found that gold tested by melting, which burned bright at first, after handling showed signs of a change. The suggestion made by Drs. Shumway, of Plymouth, Mass., Chance, of Oregon, and others, was that, as our serrated instruments are worn smooth in the course of a longer or shorter time of constant service, this can only take place by friction upon the gold, and therefore particles of steel are interwoven in our gold fillings, which make their baleful presence known by oxidation upon their surfaces. It is acknowledged that the discoloration is superficial and easily removed by polishing with pumice and exposing a new and clean surface. This again in a short time becomes discolored, and may again be repolished by the pumice, and so on, *ad infinitum*, showing that the cause, whatever its nature, permeates the whole mass of the gold.

To test this matter thoroughly, a large filling was made in a cavity excavated in a piece of ivory, by burnishing on layer after layer of foil by means of a steel burnisher, and this filling submitted to S. Dana Hayes, Esq., the Massachusetts State Assayer, for analysis. The foil from which it was made was also analyzed by him, and the following are the results, as given by him in a letter to Mr. Hood:

*"No. 4 State Street, Boston, July 29, 1876.*

MESSRS. HOOD & REYNOLDS:

GENTLEMEN—I have made analysis of the specimens of gold received from you, with the following results: The small ribbon, marked 'gold handled with dental pluggers,' contained an appreciable quantity of iron. It is very difficult to determine the exact weight of this impurity, but it is about 0.10 per cent. of the ribbon, which was said to contain four sheets of No. 3 foil. The two sheets of foil, analyzed together, do not contain any traces of iron.

Respectfully,

(Signed)

S. DANA HAYES,

*State Assayer, Mass."*

To follow up the clue here given, other fillings were made, using steel instruments, ivory instruments, as recommended and used by Dr. Shumway, and gold instruments, made of platinized gold. I had not and could not obtain Chance's instruments in Boston, which, I believe, are made of 14 car. gold, alloyed with copper and silver; therefore I extemporized some for the purpose. All fillings made with steel pluggers showed, when melted, a distinct red tinge, indicating the presence of iron; those made from Watt's crystal, Leslie's crystalline, and Morgan's plastic gold, showing it in much greater proportion than those made

from foils; and those made with small cylinders or pellets, again, much more than when large ones were used. This I attributed to the greater amount of contact of steel with gold necessary in making such fillings. A curious confirmation of this conclusion was had in the first attempt with the ivory instruments, also indicating the small amount of contact necessary to show. In making up the plug, being pressed for time, sufficient care was not taken to have the filling smooth, and quite a hump was left on the surface, while the edges were left ragged; so, before removing it from its bed, with my penknife I whittled it down smooth. Upon burning it, to my great astonishment and confusion, I found the red coloration; and only after some thought, and retracing my steps mentally, I remembered this slight touch of steel, and thought that, just possibly, this might have caused it. Going over the experiment again with greater care—absolutely shunning the presence of steel—after melting no redness was noticed in several cases, while after the repetition of the whittling it invariably appeared. The same was the case with the gold instruments. No redness was noticed on burning the ribbon where steel was kept from it, and it always appeared where steel was used.

I have been able, therefore, to come to no other conclusion than that a very large proportion of discolored gold fillings are caused by the oxidation of the minute particles of our steel instruments which are worked into them in the process of making the filling, and that the discoloration is in direct ratio to the amount of pains taken in performing the work; that there may be other causes is not to be doubted, but that this is the principal one seems as little doubtful. An easy test, which any one may make for himself, is to take a strip of heavy foil, rub one end of it thoroughly with a steel burnisher, and then melt both ends in the flame of a Bunsen burner, when it will be found that the untouched end will melt into a bright, uncolored bead, while the rubbed end will have the reddish tinge of oxide of iron. All makes of gold seem alike in this respect—all will discolor under faithful manipulation; therefore much of the blame laid upon our foil manufacturers for furnishing us with impure gold is unjust. None of the cohesive foils, which are said to be 1000 fine, have I found to discolor in the flame before using, but some of the non-cohesive, which remain so after annealing, do—showing that some preparation is placed upon or in them which gives them this peculiar quality. These soft foils are those which, in the process of filling teeth, are least handled, and as in the cylinder method, which seems to be the favorite of the hour, only the ends of the layers are supposed to be exposed, it follows that this method with pure foil should produce results least subject to discoloration.

## THE APPROXIMAL ARCH.

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By J. WASHINGTON CLOWES, D.D.S.

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In conversation recently with a distinguished member of our profession, whom I met at a social gathering of the Odontological Society, allusion was made to the subject of this article in the question, "Do you ever restore the approximal arch?" "Approximal arch," he repeated; "what is that?" I confess my astonishment at this reply. Here was a man of admitted eminence, of distinguished inventive ability, and foremost in the lines of professional advance, and yet unknowing and ignorant of an operation which I had been performing for years, and without which I should feel myself, at this day, illy qualified to solve some of the most difficult problems of dental science. Such being my estimate of the approximal arch, it has seemed to me not inappropriate to describe, however imperfectly, what I may know about it. The arch of masonry presupposes foundational bases and supporting piers, and its intent is the sustainment of superimposed weight. But the *arch approximal in dentistry* has a far different use, and subserves the purpose of keeping the teeth apart, thus beautifully reducing the maximum of danger, from contact, to its minimum amount. The baleful consequences attending contact of tooth against tooth, in the human mouth, have so completely occupied my thought and attention for years past, when speaking upon or discussing the subject, that I have neglected (except in declaring the absolute necessity for separation) to explain how separation may be accomplished and how maintained. The implements specially designed for this work are the file, the disk and the chisel. In good hands these implements will always work out a *saving* result, and symmetry, proportion and beauty will follow from their use, as surely as the likeness starts to life beneath the true artist's touch. He might describe the brush, the canvas, the colors—but who shall define the touch? I may say that the arch approximal is made of enamel, of dentine, of gold; I may name the implements employed to shape and fashion it—but who shall declare the manner of its moulding? I can do the work, but I cannot explain its doing. The approximal arch is usually formed from the contiguous enamel of sound teeth, or those but moderately decayed. The "arch restored" is based upon and built up in metal—necessitated by absence, through caries, of the accustomed material—and is a combination of the cavity filling and the original contour. An interesting

feature in this kind of operation is presented in the form of *cornua built up from the side of one tooth and projecting from it to a desired point of contact with another*, thus bringing about the most marvelous and satisfactory changes—reducing malposition to regularity, separating points of dangerous impingement, closing up unsightly spaces, and crowning all with the grace of uniformity. The approximal arch is a wondrous achievement in dental science—wondrous alike for the utility, variety and beauty of its results. In the great work of teeth-preserving there are *four indispensable necessities*. The first is *separation*, for without this there is, there can be, no *permanent* salvation. The second is the *approximal arch*, without which, in many cases, separation cannot be secured and continued. The third is *appropriate care* on the part of the patient, including the use of the tooth-brush, the quill toothpick, the waxed floss and rinsing with water. The fourth, *avoidance of acids*, except as found in fruits, and then in moderation. Solemn and significant for human welfare is this *ban* against the acids! Teeth are but organized lumps of lime, and acids are their affinity and their solvent! *There is scarcely a more dreadful expression of the civilization of these times than is shown in the depraved taste and unsatisfied longing for that which disintegrates and destroys the substance of human teeth!* Ah! verily the Moloch of destruction is in our midst! the chemist, the physician, the confection and condiment-makers, while dispensing their acids, are unconsciously aiding and abetting his disastrous work! It may be thought that I have departed from my subject and the course upon which I started, but it is not so. By showing the causes and sources of decay, I can the better explain how happily they may be lessened in their capacity to act with damaging effect. Separation enables the patient to employ the implements of defense. Separation affords opportunity for the *friction* of brush and floss and quill, and the healthful contact of water. There is a contact of safety as well as of danger. There is a saving friction as well as a friction of waste. Separation enables the very act of eating to produce a healthful change—the displacement of one portion of food by another—and in this displacement, in this change, is safety. What a noble calling, what a beneficent science is Dentistry! It is full of capacity! Its certainties are established! There is nothing more positive among mortal things than its achievements for good! But to realize all this—to make performance follow fast on the steps of promise—we must have knowledge and faithfulness in the dentist; we must, on the patient's part, have honest and intelligent co-operation.

## AMERICAN "DEGREES" IN EUROPE.

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By C. M. WRIGHT, D.D.S.

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MR. EDITOR : The question of the acknowledgment by some European governments of the degree or title of Doctor, granted by American colleges, is one that has been brewing for some time over here. Germany and France are disposed not to accept the M.D. or the D.D.S., or any other degree, from an American college. I have seen no published law from either country to this effect, but have heard so many rumors—first from German dentists themselves and travelers, and then from Paris correspondents of New York dailies—that we are safe in believing that we can "smell the battle from afar"—perhaps not so far off. Before a storm at sea or on land, ominous signs can be detected by the careful observer; and we have signs enough to warrant not only action on the part of our colleges and societies at home, but, perhaps, by our foreign ministers, on behalf of the degrees or diplomas of our respectable colleges, and of our American education. Shall we accept a deliberate legal insult to "the American system of education," without at least a protest?

That France and Germany have had absolutely no cause for suspicion we cannot say. The "University of Pennsylvania" (?) is better known over here than at home, and degrees of *Doctor* are advertised for sale, even in such papers as the *Kladderdatch*. But that governments should decide that because one bastard is found, therefore all children are illegitimate, does not come with good grace from Germany and France. The Paris correspondent of the New York *Times* states the popular opinion of Americans at home; that is, that in the old country much more regard is paid to a title of Doctor; that the degree is more difficult of attainment, more jealously guarded, and much more rare than in America. A very short residence on the Continent convinced me that there are more doctors in one small city here than any city in America, of twice the size, can boast of. There are here Doctors of Law aged twenty-two and three; Doctors of Philosophy of twenty-five summers; Doctors of Philology who have never needed a razor; and doctors of everything excepting Dental Surgery. Our account-books are filled with Herrn Doctors and Frau Doctors, and the title of Herr Professor Doctor is wonderfully numerous. A banker is often a Herr Doctor, a chief of police is a Doctor of Philosophy or Law (he may need the former quality in his calling), lawyers are Herrn Doctors, and so on.

Our joking titles of "Cap." and "Doc.," at home, become insignificant in this country of titles.

The title of Doctor in America is granted as it is here ; that is, upon graduation, after an examination, from the medical or dental school. Here, after graduating from the university, which is only a collection of professional schools in the departments of law, medicine, philology or philosophy, the student becomes doctor of law, medicine, philology, etc. In theology, as at home, after the university course, I believe the student is only Herr Candidat, and the title of Doctor comes later. There are a great many small universities here that grant the title of Doctor. Here, in the preparatory schools, the boys are, perhaps, better drilled in the dead and living languages than at home. In the Pedagogium, or preparatory school, before entering the professional or university course, the student partakes of about as much Latin and Greek as is offered to our students in the colleges, with less sauce in the way of physics, philosophy, chemistry or physiology. When he is examined, before entering the university, he knows probably more Latin, Greek and history than our average student at home, and much less philosophy, chemistry, logic, mathematics, etc. But now he is "a German student," and in his own estimation, in the estimation of the Philistines or town's people who are not students, and in the estimation of American students at home, he is a wonderful and especially favored-of-the-gods being, around whose head, as he sits in the Beer Brauerie, with his long pipe, small cap, big boots and braided coat, in the society of his big light-eyed Danish dog, not only tobacco smoke forms a halo, but traditions float. The great mugs of amber beer quicken (?) his philosophically-inclined intellect. He is proud of the scars and gashes across his nose and cheeks from the sabrecuts received in duel ; and as he swells himself with pride, he challenges his student neighbor to *so many* (six or more) glasses of beer at a draught, according to some traditional code of drinking, and "Damned be he who first cries hold ! enough !"

Next session he will pass his examination and become *Doctor*. That a recently made doctor of medicine and surgery from a German university is better prepared to *practice* medicine and surgery than one of our boys sent out from one of our respectable medical schools, I do not believe. That neither is capable until considerable after-study and practice in hospital and clinic is not difficult to conceive ; and if we could balance them as *Nast* has the Northern and Southern voter in his caricature in *Harper's*, I think the great German student, with his pipe, beer

and dog together, would not bear down the scale with Doc. Ploughboy from one of our medical schools, with too little Latin, but a great keenness of intellect, and a sharpness of insight and activity of invention in difficulties. Ten years after the college course, the doctor in both countries can be judged of by what he has done since his school-days.

The numerous articles in our periodicals show the agitation in America and England on the subject of education, and every year there is improvement. The standard of preliminary education is rising. We bid fair to have a *better* system of education than can be found in France and Germany, for it will be more in accordance with the spirit of the nineteenth century, and not be clogged and befogged with the traditions of the sixteenth and seventeenth centuries. This, then, is not the time for France and Germany to legislate against American professional diplomas, and make it an offense for a man to write Doctor on his card or door-plate, unless he shall have received that title through their own—not perfect—universities.

In Switzerland the laws are good, and are similar to those we have had established in some of our States in regard to the right to practice dentistry. There is in most cities or cantons here a Sanitäts Collegium, and physicians, dentists, surgeons, apothecaries, veterinary doctors, midwives, nurses, etc., must appear before this board and be examined as to their fitness to practice. They then receive the right or license, without which they can be extinguished. Patent medicines, nostrums, and so forth, also come under the watchful eye of this college, and harmful drugs cannot be sown broadcast among the people. Occasionally applicants do not succeed in the examinations, and can either give up the pursuit, or, after more study, try again. An American dentist with the title of Doctor must expect an examination more medical in character than a simple Zahnarzt. We have also practicing physicians who have not the title of Doctor; they sign themselves simply "Practical Physician," and do not pretend to the title, Doctor of Medicine and Surgery. That the opposition to American titles in Germany and France may come from the jealousy of native dentists and doctors may be true; but a *law* against our titles is not very complimentary to the hard workers in our colleges and societies for the elevation of their professions, nor to the American schoolmaster.

*Basel, Switzerland.*

## CARVACROL AS AN OBTUNDER—A PRACTICAL CASE.

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By H. L. SAGE, D.D.S.

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Mr. A. P. S., teacher, appeared February 29th, 1875, whose teeth presented the following conditions : The cutting edges of the superior incisors and canines, with the exception of the left lateral incisor and canine, which I had treated for abscess and filled, and also the grinding surfaces of the molars on the right side, were very sensitive to hot and cold water, cold air, salts, sweets and contact of metallic substances.

The incisors and cuspids were worn down by occlusion half the length of their crowns. The molars had sensitive saucer-shaped pits on the grinding surfaces.

I applied carvacrol in full strength on cotton pellets, for *one minute*, to the cutting edges of the central and right lateral incisors and right cuspid. This removed the sensitiveness entirely. I then applied carvacrol to the grinding surfaces of the right first and second molars (inferior and superior), for *two* minutes, with the same result as before—the removal of the sensitiveness. Mr. S. stated that he could not so much as tolerate the touch of a pin's head to the spontaneously abraded pits, before the application. After making it, "The teeth felt," he said, "as though they were encased by a protective substance." When he left the office they were not sensitive in the least. The inferior incisors, and the upper and lower bicuspid, being somewhat sensitive, I also made fugitive applications to these.

Did the carvacrol produce permanent effects?

August 17th, 1875, in about six months, Mr. S. called to report :

Though the application of carvacrol was made in February, the sensitiveness had not returned, and the teeth had been entirely comfortable.

It may be well to state that, before treatment, these teeth had been sensitive for a long time ; also that the dentine was dense and hard, with the teeth presenting polished, abraded surfaces ; yet the carvacrol produced immediate and lasting effect by penetrating the substance of the tooth, and working *without injury* wonders which no other agent with which we are acquainted will do.

Will carvacrol destroy the pulp?

A report of several cases from practice will answer this question.

December 1, 1874, Miss M. H. called, complaining of an uneasy sensation in the second left superior bicuspid.

It had a large gold filling in the anterior proximal surface, and at times had ached.

On testing the tooth by the application of a hot instrument, it was found to be more sensitive than those adjoining, which were healthy. Suspecting that close proximity of the filling to the pulp had caused it to take on inflammation, the former was removed, and the latter found to be nearly exposed. Placing a carvacroled pellet of cotton in the cavity, it was sealed up (arched over) with the oxychloride of zinc.

In about six months (May 22, 1875) Miss H. again appeared.

The pulp had had slight touches of pain off and on. The temporary filling was in good condition. Removed it. Found the dentine normally sensitive to the touch of the excavator—to me an indication that the pulp had taken on healthy action. The carvacrol had seemingly reduced the inflammation, but had not caused death of the pulp. I capped with the oxychloride of zinc, removed the excess, and filled over with gold.

A young lady, a teacher, called Feb. 14, 1875, complaining of severe neuralgic pain in the left superior sixth-year molar, of several weeks' duration. On examination, found the tooth to be sound, with the exception of a small cavity in the grinding surface, which was stopped with a gold filling. It was a hard, dense, well-formed tooth. Removed the filling, and found the pulp protected by a thick septum of dentine. Here, then, was no apparent cause of the trouble. Drilled in until in close proximity to the pulp. Saturated cotton with carvacrol, placed it in the bottom of the cavity, and arched over with the oxychloride of zinc, filling the remainder of the cavity with this material. The pain ceased, with no recurrence of the trouble.

July 29, 1875.—Examined, and found the temporary filling in perfect condition. Removed it. The pellet of cotton was still strong with the odor of the carvacrol. The pulp was alive. Capped and filled over permanently. So the carvacrol relieved the neuralgia, but did *not* destroy the pulp, though it had been in contact therewith for a period of more than six months.

From these cases we may learn that though carvacrol produces remarkable effects, it does not do it by the destruction of the tissues with which it is placed in contact.

February, 1877.—In the first case cited, the sensitiveness has not returned, though a period of two years has elapsed.

## MEETING OF THE FIRST DISTRICT DENTAL SOCIETY.

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HELD AT THE RESIDENCE OF DR. C. E. LATIMER, 102 W. 48TH STREET,  
TUESDAY EVENING, FEB. 6TH, 1877.

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The meeting was called to order by the President, and the minutes of the last meeting read and approved.

Dr. Atkinson, of the Committee on Clinics, reported that they had a very successful clinic, over sixty dentists being in attendance, and four operators. Dr. Ray filled the right superior first bicuspid, Dr. Bodecker filled the superior left first bicuspid, Dr. Pressler filled the inferior right second molar with Pack's pellets. There was a case of fistula that had baffled nearly all that had seen it. The nature of the case was one that at first sight was calculated to lead astray. I was desired to examine the case, and in examining it, I became satisfied very soon that it came from a pulpless tooth. It had been pronounced a cystine tumor, a necrosed gland, and an ordinary abscess, neither of which it was. The ambiguity of the case was discovered by putting the finger into the mouth and feeling for the tissue that constitutes a fistula. Not feeling that down to the margin led me into some doubt as to where the locality of the point of disease was, but feeling the teeth, and moving them as well as I could, I succeeded in making a little disposition to show more pus at the point of the fistula, and then, putting the finger up into the inside of the mouth, just at the junction of the prominent part of the jaw, I discovered there a little place that was slightly tender to the patient, and upon pressing upon that the pus came out very readily, and then I could trace the hardness under the jaw. These light, nervous, scrofulous temperaments have thinner bones, and the projection of the sockets which hold the roots is therefore the more pronounced. I advised the cleaning out of the roots, washing until it showed itself in the fistula, then injecting aromatic sulphuric acid, and filling the tooth.

There were several remarks made respecting the ambiguity of these cases, and the blundering diagnoses made, as a rule, by surgeons. Now I think we are not entitled to pass quite so hard judgment upon them as we usually do, and especially in this case. A man would have to be specially instructed about the condition of teeth to diagnose this case. So indefinite was it, that the gentleman who had it in his own hands was not clear himself in it. You know my attention has been given for some time to this case, and I was not clear at first concerning its nature. How

I arrived at the location of the mischief I have already indicated, but why I pursued that course I have not indicated. Looking at the sides of the face, they were not abnormally enlarged. If they had been, the swelling would have indicated definitely that it was so. I am perfectly satisfied that it does come from the root of the tooth, and I have given you the steps that I went through to get the diagnosis.

The following communication was presented by the President, and read by the Secretary *pro tem.*, Dr. O. A. Jarvis:

*Washington, Jan. 1, 1877.*

DR. J. S. LATIMER, *President First District Dental Society:*

DEAR SIR—I deem it my duty to report to your Society the present status of our coming suit. We proceeded to take testimony in New York on Wednesday, Dec. 20th, 1876. After having examined two witnesses, the counsel spoke at some length on the technical points. We had been notified to resume the taking of testimony of the witnesses on Wednesday, Dec. 27th. A request was afterwards made that we would resume on the 12th of January. An order has now been obtained from the Judge in Chambers staying proceedings in the case. From this course of proceedings, and from the evidence we have, we are justified in saying that we are, even at this early stage of the case, masters of the situation, and intend to remain so to the end.

I will report, from time to time, the progress of the case. In the mean time, to avoid misrepresentation in the future, I would ask that this be entered on the records of your Society.

Very respectfully,

R. F. HUNT.

Subject of the evening: "Effects of Systemic Disease upon the Development and Health of the Teeth."

A paper was read by Dr. Atkinson, in which he stated that to understand the manifestations of health is especially requisite to the acquaintance with disease. Health is that state of the body that results from the full performance of all its functions. Systemic diseases may so derange the nerves of the body as to degenerate the chemical solids of the tooth substance, and thus destructively affect the teeth. When this occurs during the development of the teeth, they are impressed at the points, indicating calcification at the time, or arrest in growth until the disease has been corrected. When the elements requisite to the conception of perfect teeth are deficient in the food supply, we shall have a corporized pabulum, from which we cannot obtain very many teeth. In this case it seems to be an inability of the appropriate cells to take up the decidu-

ous elements and deposit them in their destined places, more than a lack of those elements in the food supply. As the teeth are developed once for all, special care should be devoted to hygienic principles. Skin diseases are capable of affecting the teeth so as to render them liable to disease. Most of the constitutional disturbances of childhood have their seat in the mucous and dermal tissues. These functional processes depend upon a variety of circumstances connected with the habits, the food, and the associations of the child, usually called hygienic conditions, and when perfect regularity is secured, we may confidently expect the legitimate performance of all these functions. The next point is to prevent the exposure of the child to morbid agents, the contagion of which sets up the various forms of eruptive diseases, such as varioloid, scarlatina, etc.; the well known effects of which are so frequently seen at the point corresponding to the state of development of the teeth at the time children are under the control of disease.

Dr. Clowes: The difficulty I find in filling diseased teeth is not in the disease itself, but in the canal, drilled by some dentist before the case comes into my hands.

Dr. Cunningham: I have had but very little experience in the treatment of children's teeth. With regard to the importance of cleaning teeth, it would be well to know how far the destruction of the teeth may result from constitutional causes, and then, again, how the teeth themselves may give rise, in their turn, to further constitutional difficulties. With regard to cleaning the teeth, I think the floss silk superior to anything else; and I would like to know what advantage the toothpick has over the floss silk. I can see none. I have not come across any cases where the toothpick has done very serious harm, but I have frequently noticed people using the toothpick more as a plaything than anything else, and the gums frequently become ulcerated; but I have never seen anything of the kind resulting from the use of floss silk.

Dr. John Allen: I feel it a very difficult task to throw any additional light upon the subject that has been so fully and well developed and defined by our good friend, Atkinson. He always covers the ground, and tells us all there is to know about it. I will remark that we all have met with cases where systemic disease has had much to do with the teeth; and the diseases to which children are subjected—measles, whooping cough, and various other diseases that can be named—lay the foundation for a diseased condition of the teeth, if they are not properly attended to and carefully watched through their disease. I have seen many cases where I could trace the effects that were present right back

to a disease—scarlet fever, for instance, or something of that kind—that the child had had, and you can almost invariably tell, by looking at the teeth and seeing their condition, whether their condition has been the result of some disease, or whether it has been from some local cause. There is a good deal in building up the system with the proper materials; and yet, although the proper materials may be used, the condition of the system will be such that it will not be benefited, and consequently there is a difficulty that ought to claim our attention—how we can affect the system so as to cause it to appropriate the food that is taken into the system. This is a wide field and a very important theme, and I wish that our profession would bestow much more attention to it.

Dr. J. S. Latimer: Wherever we have inflammation of the stomach we have an intensely acid condition of the oral fluids, and certainly these acids act upon the teeth. Where we find a scrofulous taint, the dentine is exceedingly sensitive. Who does not know that if the patient has a torpid liver, the difficulties of the treatment are increased wonderfully? We all know that if the system is filled with malarial poison we have trouble in the treatment. I have had several cases in which there was spontaneous devitalization of the pulp, caused by simply lowered vitality. This is more likely to be the case with consumptive persons.

Dr. Jarvis: I have no doubt that you all feel very much as I do after discussing a subject of this kind, that it is a very important one, and that there is a great deal we ought to know about it. We are ready and anxious to learn, but we have not had the opportunity of doing so; and yet the subject, in many of its bearings, presses heavily upon my mind. It is a difficulty that should be overcome, perhaps, by careful attention at home. That a company of dentists should assemble after a notice of a month for the consideration of a subject of this kind, and not a question to ask or disposition to answer, is certainly a very strange thing, and I plead my share of culpability in the case. I will approach it in one aspect, and that is this: I am gifted with a very acute sense of smell. My nose has always been a tremendous trouble to me, and is growing worse every year. Now, I have traced a direct connection between the matter of the air that we breathe and the teeth, and so direct that I could no more ignore it than I could the sunshine coming through my window, when I wanted to operate upon the teeth. I am ridiculed because of this sensitiveness, and am called a croaker. The facts, though notorious, are not given any weight by the people in general; neither are they by professional men, and yet, Mr. President, I will agree to tell you, in the case of almost any patients that enter the office, what kind of

atmosphere they live in. It is not many hours since that I told a lady that she did not ventilate her room. She lived and slept in a close, stale, poisoned atmosphere. When an individual of that description comes into the office, we can determine the cause of the difficulty; that the system is full of disease, that the blood is loaded with impurity, and almost entirely from the atmosphere. We can detect the effects of a foul atmosphere in the breath. It is a different odor from a sour stomach, from a dyspeptic stomach, or anything of that kind. It is in the clothing, as I have already remarked, and in the person. When such a person presents in the office, I never expect to find the teeth free from sensitiveness. I might right here, perhaps, give an illustration. A young lady presented herself last summer to have her teeth filled. I told her they were so sensitive that I dreaded it worse than she did. I did not like to attempt to do anything for them. Then I told her the difficulties in the case, and, as a primary difficulty, the want of good fresh atmosphere, besides care of the teeth otherwise. Time passed on, weeks and months, she following the course of treatment I had prescribed. The results were eminently satisfactory, far exceeding my expectations. I commenced to operate, and a week ago Saturday I finished the last of some twenty-five or thirty fillings in her mouth, without any considerable pain. I had at first manipulated enough to show her definitely that it was impossible to work on those teeth and perform the operation; that was a fixed fact. She needed no further argument. Now I do not assert that this is the only cause. It is not the only cause; but I believe it is one of the most prolific causes of sensitive dentine, and of the decayed teeth of broken-down constitutions. There is a connection between all that I am telling you. Go into Broadway now and look in the faces of the women that you meet; you will not find one countenance in a thousand that you can believe the Creator was looking at when he said "It is good." Go into the church, go anywhere where you see an audience—and if you do not find humanity deformed, and disfigured, and diseased, then you won't observe what is before your eye every hour and every day. Now, gentlemen, we are probably careful about our offices to some extent, but we must be a little careful about our patients at home. But the lack of intelligence on this point is one of the most astonishing facts that I know of at the present time. It is perfectly astounding. Last Sunday morning I went to church. I said to my daughter, "I have a notion to go home, the atmosphere in here is so stifling; it has not been changed since last Sunday." I staid, however, and I suffered, and the suffering increased until it was severe. Last evening, in the Young Men's Christian Association,

the hall was crowded, as it was the Monday evening before. We had on those evenings the grandest discourses to which I ever listened. But as a scientific and professional fact, having to do with the health of mankind, I ask why is it that that audience after awhile, from a half to three-quarters of an hour, begin to be uneasy under an eloquent speaker, and listening to the most profoundly interesting discourses. Why is it? Our patients will keep still if they are not suffering. But this audience is evidently suffering.

They look imploringly for windows and doors. If the air was right when they entered, how was it thirty minutes later, when fifteen hundred people are using up 18,000 cubic feet per hour?

We came into this room two hours ago. We have breathed during the two hours we have been here seven hundred and fifty cubic feet of air. Have you provided for that supply? Not at all. I claim that there is more ill health produced by foul air in our churches, lecture rooms and elsewhere than from all other causes together. It is a very simple matter to ventilate any room. If it has two openings it can easily be done.

Dr. Atkinson: I wish we could all understand the sentiments of what Dr. Jarvis has said. It is not the amount of air that we have taken into our lungs and thrown out again that answers the question, but the point is this: Air that has once been used in the lungs carries its four per cent. of oxygen to the blood. The other 96 per cent. has been consumed by the death principle, so that it is not fit to be used. We want to be better posted than any of us are, to be able to utilize it, and make it a tangible thing, so that we understand it. Now the doctor seems to coincide in his remarks with the idea that the carbonic acid in itself is a poison. It is only a poison by way of occupying the place in the atmosphere that the oxygen should have. Hence it is not a poison itself, but simply as a substitute of the unnitrogenous for the nitrogenous elements. Now the great thing is to get the pure air that he has spoken of; but you must get it in the sunshine if you expect to have health.

Subject for next meeting: "Practical Hints of value to the Dentist," at the residence of Dr. John Allen, No. 7 W. Thirty-third Street.

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THE USE OF CHLOROFORM AS AN ANÆSTHETIC has been interdicted in Bellevue Hospital, New York. It is remarkable that at the South those in general surgical practice have not yet met with those accidents in the use of chloroform so common in the North, and which prohibit its anæsthetic use there. The experience of Southern surgeons, as a rule, leads them to *prefer* chloroform.

## ADVANCE IN CHEMISTRY.

## COMPOSITION OF THE ALKALOIDS, AND OF ALBUMINOID BODIES.

Transactions of the Medical Society of Virginia. Reported by J. W. MALLET, M.D., Ph.D., University of Virginia.

Premising that the rapid progress of organic chemistry within the last twenty years has been largely due to the more definite form assumed by the great guiding hypothesis known as the atomic theory, the reporter briefly sketched the chief features of this theory as at present held by most chemists, and under the following heads:

1st. Atoms may be assumed as really existent particles of matter, so small as to elude direct observation by our senses, but nevertheless possessed of perfectly definite (and, for the same elementary kind of matter, uniform) weight. Various physical and chemical considerations enable us to determine the weight of an atom of one kind in terms of the weight of another—the hydrogen atom being now always taken as the standard with which others may be compared. Amongst the considerations serving to fix the relative weights of atoms, increased importance attaches to the “law of Dulong and Petit,” that for the same element the specific heat (or amount of heat required to raise to a given extent the temperature of a given weight of the body) varies inversely as the atomic weight, or weight of the atom—new researches going to show that the law is a general one, and clearing away exceptions to it formerly noticed.

2d. The term “molecule” applies to a group of atoms held together by chemical affinity—these atoms being either of the same kind (in elementary matter), or of different kinds (in compound forms of matter). In either case, the molecule represents the smallest portion of the mass of matter to which it belongs capable of existence with the properties characteristic of that mass.

The number of atoms in the molecule—and, therefore, the weight of the molecule—is perfectly fixed for the same substance. The greatest service in determining the weight of the molecule of a substance is rendered by the “law of Avogadro and Ampère,” that in the state of gas or vapor, equal bulks of different substances, examined under the same conditions, always contain the same number of molecules, so that the specific gravity of the vapor becomes a measure of the weight of the molecule.

3d. In studying any chemically pure substance, our aim is to discover

the true structure of one of its molecules, since all of these are alike; and if our knowledge were complete as to one, it would be so for all.

In reference to the single molecule, we try to ascertain—

*a*—The *kind* (or several kinds) of atoms present in the group.

*b*—The *number* of atoms of each kind.

*c*—The *arrangement* of these atoms, or manner in which they are mutually connected and held together.

4th. In not only weighing, but *counting* the atoms in a molecule, it has been observed that an atom of a given kind manifests a tendency to unite itself with a fixed number of atoms of the same or any other given kind. Thus, one atom of hydrogen unites or combines with one other atom of hydrogen, or with one of chlorine, or iodine, or bromine, but not with two, three, or any higher number. One atom of oxygen unites with two of hydrogen or of chlorine, and one of calcium unites with two of chlorine; but one atom of oxygen and one of calcium mutually satisfy each other. Considered in this light, hydrogen, chlorine, iodine and bromine are called monads, oxygen and calcium dyads, while the nitrogen atom is triad, or requires three atoms of hydrogen or chlorine to fully satisfy its tendency to combine, and the carbon atom is tetrad, or requires four monad atoms (or two dyads, or one triad and one monad). This “atomicity,” or capability of combining with definite *numbers* of atoms, is, in general, fixed for any given substance, but is occasionally observed to vary within certain narrow limits—an atom of nitrogen, for example, usually uniting with three, but sometimes with five, monad atoms, as of hydrogen or chlorine.

5th. Complete knowledge of the structure of a molecule would be expressed by a *picture* of its constituent atoms, showing their kind or kinds, number, and position or arrangement. An approach to such a picture is made by the “graphic formula,” now largely in use, in which the atoms are represented by the letters employed as their symbols; and these symbols are connected by lines, the number of which stands for the number of “bonds” or links of affinity, the total number of such bonds radiating from any one atom being determined by its atomicity—hydrogen having but one, oxygen two, carbon four, etc. Of the *shape* of the individual atoms and of that of the molecules they compose, we know nothing; and hence the mere lettered symbols are used without any figures of the atoms themselves, and the lines representing bonds of connection are drawn *in any direction*, their number alone being attended to. Thus the single molecule of hydrogen is represented by  $\text{H—H}$ ; that of chlorine by  $\text{Cl—Cl}$ ; that of ordinary oxygen by  $\text{O=O}$ ; that of water

by  $\text{H}-\text{O}-\text{H}$ ; that of carbon dioxide (or carbonic acid) by  $\text{O}=\text{C}=\text{O}$ ;

that of ammonia by  $\begin{array}{c} \text{H} \quad \text{H} \\ \diagdown \quad \diagup \\ \text{N} \\ \diagup \\ \text{H} \end{array}$ ; that of marsh gas by  $\begin{array}{c} \text{H} \quad \text{H} \\ \diagdown \quad \diagup \\ \text{C} \\ \diagup \quad \diagdown \\ \text{H} \quad \text{H} \end{array}$ ; that of

methyl chloride by  $\begin{array}{c} \text{H} \quad \text{Cl} \\ \diagdown \quad \diagup \\ \text{C} \\ \diagup \quad \diagdown \\ \text{H} \quad \text{H} \end{array}$ ; that of acetic acid by  $\begin{array}{c} \text{H} \quad \text{H} \quad \text{O} \\ | \quad | \quad | \\ \text{H}-\text{C}-\text{C} \\ | \quad || \\ \text{H} \quad \text{O} \end{array}$ , etc., etc.

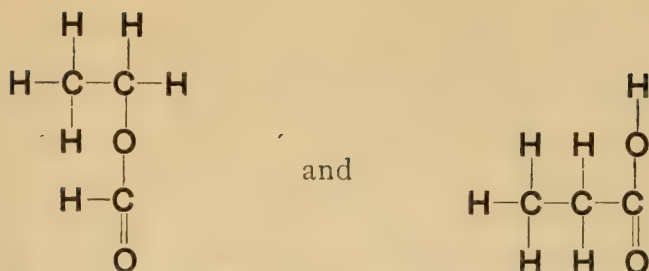
6th. That these graphic formulæ are but rude and incomplete ideal pictures of the molecules they are intended to represent, is true; but that they are capable of being written so as to express such knowledge as we possess as to the substances in question\* is undeniable; and the strongest evidence of the value of thus looking at the composition of the various bodies we examine, studying not merely the nature and relative quantities of the constituents, but the way in which they are put together, is afforded by the light thus thrown upon many facts long known but formerly inexplicable, and above all, by its having become possible, to a certain extent, to *predict* results afterwards verified by experiment. Thus it becomes easy to see how the same elementary oxygen atoms may at one time be united in pairs as molecules of ordinary oxygen gas  $\text{O}=\text{O}$ ,

and at another may combine into groups of three as ozone,  $\begin{array}{c} \text{O} \\ \diagdown \quad \diagup \\ \text{O}-\text{O} \end{array}$

the latter substance exhibiting a specific gravity once and a half as great as that of the former, and being much more easily decomposed by removal of the third atom, which easily enters into new relations of combination. We have rendered visible, as it were, that hydrogen is known in but one form, although oxygen has two, as above mentioned, for two monad atoms of hydrogen being once combined to produce the ordinary molecule  $\text{H}-\text{H}$ , there is no point of attachment for a third atom. The two quite different substances, formic ether and propionic acid, very unlike each other in properties, give yet exactly the same results on analysis—carbon, hydrogen and oxygen—and in exactly the same proportions ( $\text{C}_2 \text{H}_6 \text{O}_2$ ). They are said to be isomeric with each other; *how* this may be is easily gathered from the different graphic formulæ—

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\* The only danger being that the formulæ may be taken to express *more* than, from experiment, we really do know.



which we have reason to believe truly represent the difference in arrangement or mutual connection of the atoms.

In many cases of the alteration of a molecule by replacement of some of its atoms by others of different kind, while the general structure and character of the molecule are preserved, we can foresee how many such replacements are possible by a glance at the graphic formula, assumed correctly written; and such forecasts are found to be verified by subsequent experiment, as many new modifications of the original body being obtained as theory indicates, and no more.

Hitherto these structural formulæ have been entirely wanting for the two extremely important classes of substances, the alkaloids or natural organic bases, which furnish us with such invaluable remedies as morphine, quinine, strychnine and atropine, and the albuminoids, or bodies related to albumen, which play so prominent a part in building up the highly-vitalized tissues of the body. We can spread out the common

formula for alcohol,  $\text{C}_2 \text{H}_6 \text{O}$ , into  $\begin{array}{c} \text{H} \quad \text{H} \\ | \quad | \\ \text{H}-\text{C}-\text{C}-\text{O}-\text{H} \\ | \quad | \\ \text{H} \quad \text{H} \end{array}$ , thus exhibiting

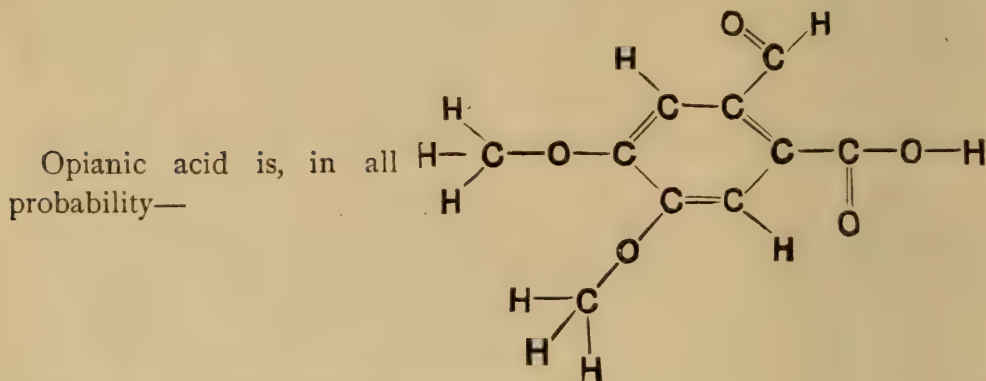
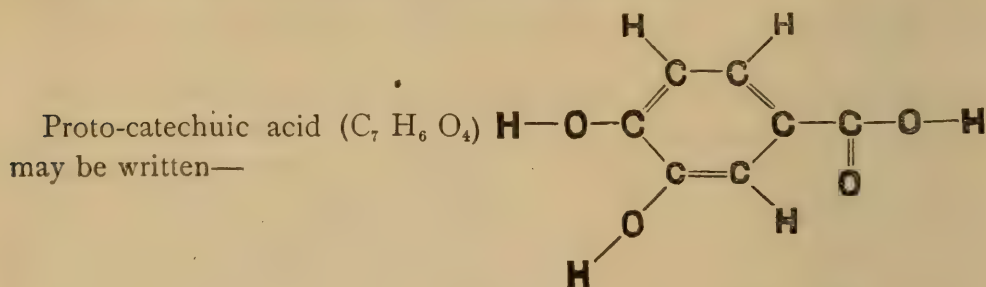
what we believe to be the condition of mutual attachment of the atoms, but we cannot do the same thing for the quinine formula,  $\text{C}_{20} \text{H}_{24} \text{N}_2 \text{O}_2$ ; how these numerous atoms are associated we know not.

Of late, certain laborious researches have begun to throw a certain degree of light upon the real nature of these important substances, and although the work of thus disentangling their formulæ is still far from complete, and has been confined to but one or two individual substances of the classes referred to, great interest attaches to even the imperfect results as yet before us, especially when we recollect the strong family resemblance of the different alkaloids to one another, and the corresponding likeness to each other of the albuminoids, leading to the hope that a knowledge of the composition of one member of either class may prove a clue by which that of the rest may be attained. The work of Wright and Beckett upon narcotine, and of Weidel upon cinchonine, and the investigations of Schützenberger, Knopp and Hlasiwetz upon albumen, deserve to be especially mentioned, and some of their main results were briefly stated in the report.

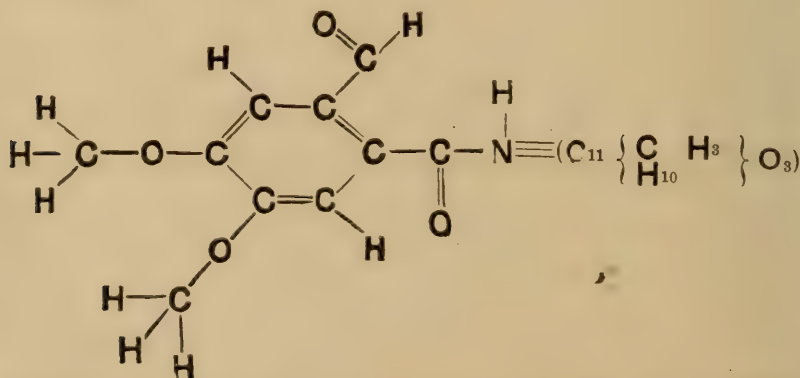
It was shown by Wöhler, some thirty years ago, that when narcotine,  $C_{22}H_{23}NO_7$ , is heated with oxidizing agents, as black oxide of manganese and sulphuric acid, it splits up into a new base (cotarnine) and opianic acid—



Wright has recently succeeded (by the action of fused potash) in tracing back opianic acid to proto-catechuic acid,\* producing the latter from the former, and establishing the relation between them. The composition and structural formula of proto-catechuic acid may be considered as already known with reasonable certainty, and as originally referable to the important benzole nucleus which forms the starting point of such a multitude of interesting organic substances.



while narcotine assumes the formula—



\* Most easily prepared from East Indian kino.

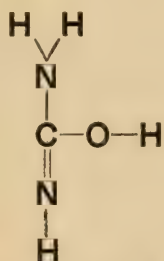
in which the portion to the right represents cotarnine with still unknown structure, while the left-hand portion displays the probable arrangement of the atoms in the remainder (the opianic acid part) of the molecule.

It is noteworthy that the portion of the molecule whose structure is thus exhibited is found traceable to the family of astringent substances, of which tannic and gallic acids are familiar examples—substances widely diffused in the vegetable kingdom, and found associated with the alkaloids, as in Peruvian bark, bark of *nux vomica*, etc.

The question of unraveling, by such researches as these, the molecular structure of the alkaloids, presents not merely general or theoretic interest, but the possibility of future practical results of the utmost value, since the rapid progress made of late years in the artificial reproduction of organic substances at first obtained from natural sources has been based upon just such studies of structure; and as the patient examination of the true nature of alizarine and purpurine, the chief coloring principles of madder, has led to their artificial manufacture from the anthracene of coal tar—now fast doing away with the culture of madder itself, and releasing thousands of acres of land to the production of other crops—so we may hope yet to see, by similar lines of research, the great problem solved of the manufacture, from cheap and abundant material, of morphine and quinine identical in character and composition with what we now obtain from opium and Peruvian bark.

The chief result of Schützenberger's study of albumen is the development of the fact that this important substance may be viewed as "a complex ureide," or product of the union of the chief portion of urea with other molecular residues.

The structural formula of urea ( $\text{C H}_4 \text{ N}_2 \text{ O}$ ), the most characteristic and abundant constituent of the fluid excretion of the kidneys, may be written—

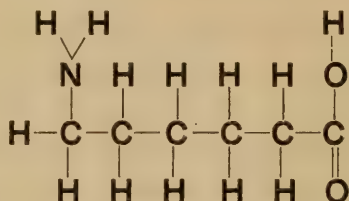


and serves, in great measure, to account for the great number and variety of the substances into whose composition it is believed to enter, its hydrogen occurring in three different relations, and admitting of replacement to varying extent. Very often we encounter a substance which, by taking up the elements of water, splits into urea\* and something else,

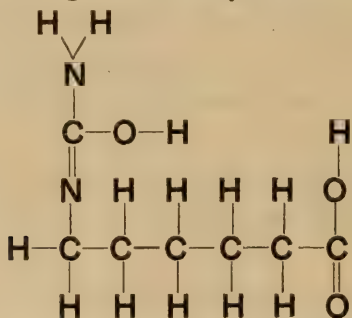
\* In the act of separation, the urea itself often, taking up the elements of another molecule of water, further splits into carbon dioxide (carbonic acid) and ammonia ( $\text{C H N}_2 \text{ O} + \text{H}_2 \text{ O} = \text{C O}_2 + 2 \text{ N H}_3$ ), as in the alkaline fermentation of urine.

one or both atoms of hydrogen from the water going to complete the urea molecule, and the remainder completing the molecule of the second product; so that the original material may be looked upon as produced by the union of a molecule of urea and one of a second substance, with elimination of a certain amount of hydrogen and oxygen in the form of water. Such bodies are known as ureides, to which class belong the uric acid found in normal urine, allantoin existing in the allantoic fluid of the foetal calf, etc.

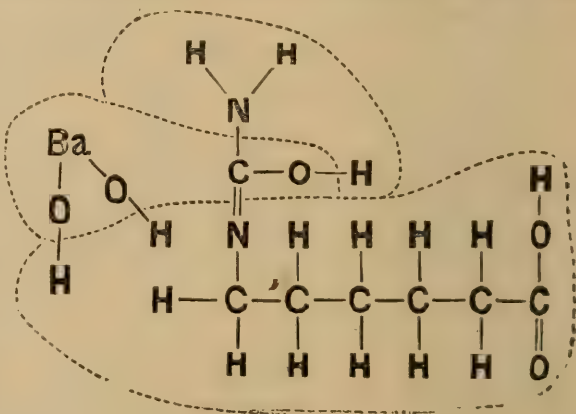
Schützenberger has examined with great care the products formed by acting on albumen with barium hydrate at regulated temperatures, and has found that, neglecting certain minor substances and the results of secondary changes, the main products are ammonia, barium carbonate, and a number of amidated acids referable to three different series. Perhaps the most abundantly found and characteristic of these last bodies is leucine, or amido-caproic acid ( $C_6 H_{13} N O_2$ ), whose graphic formula is—



The ureide corresponding to this may be written—



and if we place beside this the formula for barium hydrate,  $Ba H_2 O_2$ , using dotted lines to show where the molecules are broken in the reaction, and to surround those newly formed, it is easy to see how the products of mutual decomposition will be, as found by Schützenberger, ammonia ( $N H_3$ ), barium carbonate ( $Ba C O_3$ ), and leucine ( $C_6 H_{13} N O_2$ )—



The explanation thus given of the production of leucine applies in just the same way to the formation of the other amidated acids found in Schützenberger's experiments, and serves to illustrate his general conclusion that albumen is essentially a complex ureide. The interest of this result is obvious, in connection with the production of urea from the nitrogenous tissues of the living body, and a clue is suggested by which we may hope to gradually arrive at a definite structural formula for albumen itself, and for the numerous closely-related substances which, under the name albuminoids, at present do much more credit to the labors of the physiologist and anatomist than they do to those of the chemist.

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## THE BORDER-LAND OF INSANITY—WITH EXAMPLES SELECTED FROM AMONG THE ILLUSTRIOUS INSANE.

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By EUGENE GRISSOM, M. D., Superintendent of the Insane Asylum of North Carolina, Raleigh.

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[*From Virginia Medical Monthly.*]

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*Continued.*

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The history of royalty is full of proof that the brain whereon the crown rests is often no more fit for royal cares than that which the plaited straw surrounds in yonder poor maniac's dream.

Thus read a page or two of the life of Frederick the Second of Prussia, the father of Frederick the Great. For a dozen years before his death, and after long and repeated seasons of the extremest debauch, the King's health gave way; what the world recognizes as hypochondria set in; a state of profound despondency and bodily suffering. He became as austere in religious observance as before he had been wild in excess. All conversation in the royal family was forbidden, except upon religious topics: he compelled all its members daily to read sermons and sing hymns. He obliged the Prince and his sister to eat most nauseous dishes—would even spit in their food—addressed them always in severe language and struck at them with his crutch. His disease was plainly exhibited when he tried to strangle himself; but his life was saved by the Queen.

Having beaten Prince Frederick more than once to the point of exhaustion, he seized him finally by the hair and threw him to the ground (for his physical strength was great), beat him as long as it gave him satisfaction, when he dragged him to the window in maniacal fury to throw him headlong, but was happily prevented by those who came to the rescue. Failing in the effort to secure a renunciation from the Prince of his right of succession, he allowed him to attempt to escape, in order

that he might obtain sentence of death upon him by a court martial; and that he tried to anticipate by an attempt to run him through with his own sword. Failing in the sentence of death, he condemns both the Prince and his sister, his child and tender daughter, to the cold cell of a prison, and begins a course to convert them to Christianity.

Writing a letter to the prisoner's chaplain, he betrays the long cherished delusion that had mastered his brain. He knew, he said, that his son had a heart of iron, and was a puppet in the fangs of Satan. All this was to drive out the demon and convert his unhappy boy to a reasonable being. The Prince was confined in a miserable room, and on the very edge of starvation, for a great length of time. The King never recovered his reason; yet, such was the ignorance of that day and the sacredness of power, that he grasped the crown to the very last. It may even be doubted if the child of so much persecution, the great Frederick, did not himself exhibit the deep mark of his father's malady, in a thousand minute details which we will not stop to reckon here.

Indeed, so far from peace and health and strength as the heritage of the imperial purple, the dazzling seat of power has always held some uneasy, toppling wretch, whose sceptre was half unreal in his nerveless grasp. Philip of Macedon was once insane; King Saul is clearly pictured so; Mahomet was an epileptic, given to magnificent visions; Cæsar was another epileptic, and, as Cassius says, like a sick girl when the fit was upon him. Napoleon believed in his star as ruling his destiny; he is reported also to have suffered from epilepsy, twin-sister of madness; he is known to have lost a great battle when in much bodily suffering and confusion of ideas from a fit of indigestion; he was not unoften surprised in profound solitude watching some airy figure of his brain, and holding his hand to the retreating shade.

On the other hand his antagonist, Castlereagh, the architect of the Union of Ireland with England in one legislative body, whom Parliament thanked for his labors in the settlement of Europe, after the fall of Napoleon, became shattered in mind from the great labors of the session of 1822; and although known to be in a fit of insanity, his physicians allowed him to go to his seat in Kent, where he soon took his own life.

Peter the Great, whose exploits have been the wonder of our childhood and whose powers of administration and superb executive energy challenged the admiration of all men, paid alike the inevitable penalty of a vicious ancestry and a disordered life. He gave himself up to the control of evil passions, and the most debased sensual excesses. History

abounds with the strange freaks that will occur to every reader. He sees his son, Alexis, condemned to death; at another period he remains three days and nights fasting upon the death of Peter, his favorite son, and his own life was despaired of. Again, for maladministration, he flogs with the *dubina* (his cane of Spanish reed) the person of the celebrated Menzikoff, prime minister of the realm. Finally, the paroxysms of an obscure disease, which physicians recognize as exceedingly painful, ushered in outbreaks of wild mania, and he came to the grave.

Victor Amadeus I, of Sardinia, was a victim of kleptomania. King as he was, he could not resist an overpowering inclination to commit the most petty thefts of valueless trifles.

Queen Francisca, of Portugal, is another monarch whose insanity was so complete as to remove her from the throne in the early part of the century.

But probably no page of royal calamity possesses the interest to the American people, which hangs about that which recounts the misfortunes of George III. This monarch, it has been said by a distinguished authority, was one who might least have been expected to fall into insanity, by hereditary predisposition or bodily constitution. But will not a full examination of his history rather indicate the contrary opinion? The father of the Hanoverian line, Duke William, of Lunenburg, called William the Pious, was deprived by fate of sight and reason. "Sometimes, in his later days," says Thackeray, "the good Duke had glimpses of mental light, when he would bid his musicians play the psalm tunes which he loved. One thinks, says he, of a descendant of his, two hundred years afterward, blind, old, and lost of wits, singing Handel in Windsor Tower."

The fifteen children of William the Pious had but a small inheritance, and the sons drew lots to determine which should marry and continue the line of Guelphs. Upon the sixth brother, George, the fortunate lot fell. You are familiar with the fortunes of his descendants; how, after Queen Anne's death, the English throne went to the distant Elector of Hanover, who did not even know the English tongue. He seems, with his court, to have spent his days in plundering his subjects; quietly, his worthless and criminal wife, it is well known, was a State prisoner for thirty-two years. The son, George II, knew no law but his passions. It was he who challenged his brother, King of Prussia, with sword and pistol, to settle a great transaction; day and seconds were chosen—only the fear of the ridicule of Europe stopped them. He lived among women unfit to touch the hem of the garments of the pure, the life of a Turk in

his seraglio, at sixty years of age. He tainted society by bad example, gross and low from youth to hoary age.

The son whom he hated, and drove from his house, without his own children to accompany him, was Frederick, who died before reaching the throne, leaving a son, George III. George II was found dead, it was said, in an epileptic fit. The new King never mentioned his father Frederick. What could he have been, hated and forgotten by parent and child?

George III was a dull boy, of little brain, brought up without much education, by a very domineering and narrow-minded woman. The child was kept in loneliness and gloom, deprived of pleasures, and filled with prejudices. The hard and cruel mother, once seeing the young Duke of Gloucester unhappy, sharply demanded why he was so silent. "I am thinking," said the poor boy. "Thinking, sir, of what?" "I am thinking if ever I have a son I will not make him so unhappy as you make me."

After his marriage with a plain but excellent German girl, the King lived a quiet country life; but the penalty of the transgression of former generations must be enforced. He was insane five times, first in 1765, when he was but twenty-seven. This followed immediately after a cure of chronic eruption on his face. In 1778 his malady returned with fearful power. All the gestures and ravings of the maniac appeared, and the wild howlings of a beast. He attempted to throw himself from the window, and for a time it was thought life would give way. The attack lasted about five months, when he resumed the reins of power. The fact is a touching one, that an early act upon recovery was to visit a poor-house and examine the new rooms being prepared for the more comfortable accommodation of lunatics, and express his gratification at the work of charity.

Perhaps a single anecdote may be admissible here concerning his treatment. Although he soon became calm, and never evinced any disposition to strike or injure any person or furniture, he was subjected to mechanical restraint to increase his self-control. No patient, not even the humblest wretch, would now be subjected to the ordeal which he underwent. A writer relates that while walking through the palace during his convalescence accompanied by an equerry, they observed a straight-jacket lying in a chair. The equerry, averting his look as if to conceal some embarrassment, the King said: "You need not be afraid to look at it. Perhaps it is the best friend that I ever had in my life." The famous Dr. Willis was his physician, and asserted that the attack

came from "weighty business, severe exercise, too great abstemiousness and little rest."

George III was again seized in 1801; for a few months in 1804; and for the last time in 1810, as he remained in that condition until his death in 1820. Among his delusions was one that he could preserve an intercourse with the dead. Once in the council addressing himself to two friends long in the grave, Sir Henry Hallford, the court physician, reminded him that they were dead. "True," was the reply, "they died to you and to the world in general, but not to me. You, Sir Henry, are forgetting that I have the power of holding intercourse with those whom you call dead. Yes, Sir Henry Hallford, it is vain, so far as I am concerned, that you kill your patients." When he had been several years a patient in Windsor Tower, he was found by the Queen one day singing a hymn and playing on the harpsichord. When he had finished, he knelt, prayed for his family and the nation, and implored the restoration of his mental powers. Suddenly he burst into tears, and the veil between him and his kind had fallen again.

His entire reign was the era of the bitter strifes of Pitt, Fox, Sheridan, Burke, and all the immortals of that age of British oratory. The poor dull King, with the common people at his back, arrayed himself against the patricians. He said he knew he wanted his people's prosperity; so whoever did not think with him, and stand ready to obey, must be a traitor. Hence his war upon the colonies. The Americans were petulant rebels, who must be taught to fear God and honor the King, much as his stern mother had disciplined him, and he succeeded, and war was declared. The poor mad King, who bore a disease-stricken frame for eighty years, cried at last for mourning to wear, when he heard a funeral knell, for, said he, "Poor George III! I know he is dead."

Turning from the royalty of place to that of human genius, and high fame, we are literally bewildered amid the throng of those upon whom brain disease laid its mark, whether lightly, as the touch of a child, or even like the fiery brand of the executioner.

Among the ancient worthies, great Socrates himself did not escape. Plato and Xenophon both speak of the familiar *daimon*, which they averred always accompanied him, and, when it made its voice heard, always guided his plans. This has been supposed a hallucination of hearing. And what a man was the great philosopher, wearing the same garment an entire year, barefoot in winter and summer, often dancing wildly, carrying his head in a strange position, with no occupation but preaching in the markets and shops, and pouring his relentless irony upon

friend and foe, perhaps to return upon the world what he bore from his own wife. He is said by Diogenes Laertius to have remained an entire day in a trance, in one position, standing and hearkening to a celestial voice, at the siege of Potidea. Yet this is the man whose sublime doctrines, by ancient and modern alike, are confessed to be first in the heathen world.

I will not dwell upon the references in ancient lore to the madness of Hercules and Ajax, Ulysses and Lysander, Bellerophon, and Plato himself. But, in more modern times, we find Tasso, the immortal author of *Jerusalem Delivered*, shut up for years, a victim of the wildest delusions. Benvenuto Cellini, the artist, sees a resplendent light hovering over his own shadow. Raffaello himself declares that while painting the *Transfiguration*, that magnificent creation of human genius, he might well have been considered an enthusiastic madman. He forgot himself absolutely, and the whole action passed before his eyes. Pascal, whenever in intense thought, beheld a fiery gulf open at his side. If his attendants placed a chair between him and the precipice, composure might return, as he beheld an obstacle between himself and danger—so portentous is the power of diseased imagination! Descartes, whom I need not characterize as one of the greatest minds known to fame, was followed, as he supposed, by an invisible person, calling on him to search for truth. Metastasio, who described in his exquisite writings the sensations of incipient madness, drew it from his own unhappy experience. Cruden, the author of the famous Concordance to the Bible, wrote it while insane. He was three times within an asylum, once before he was twenty years of age. Joan of Arc, the maid of France, suffered from a physical disorder, which any physician recognizes now as the forerunner of insanity; and a thousand facts show that this maiden of poetry was a victim of a form of insanity, in which there is the full conviction of the possession of supernatural power. Kean, the actor, died from mental strain, in personating Othello. Rousseau was followed by a life-long delusion that he was persecuted by the entire world. Jerome Cardan, the greatest physician and natural philosopher of his time, was tormented with hallucinations, as was Paracelsus, also.

Pascal, to whom I have already referred, and whose mathematics were only second to Newton, after he had broken down his physical frame by fastings and vigils, and overworked his weary brain, actually wore an amulet against the demoniac visitations that destroyed his peace.

Indeed, "overwork of the brain," it has been justly said, "is unlike an excess of labor when demanded of other organs. They refuse to dis-

charge their functions when overtasked, or, gradually gaining rest, are at last enabled to accomplish the task. Overworking the stomach destroys the appetite, and the duty is no longer imposed. Overworking the muscular system does not break down that, but rather the nervous system, with which it is so nearly connected. The overworked lungs throw part of their work on the liver, and the overworked liver on the kidneys. But the overworked brain finds no helpmate in the economy of the organism." Lest one appear to judge rashly, let us look more closely to the record.

Torquato Tasso, whose *Jerusalem Delivered* alone ranks with the *Paradise Lost*, the *Iliad*, and the *Divina Commedia*, the four great epics of mankind, was born in 1544, and was the son of the poet, Bernardo Tasso. To scan his life in few lines, his young brain was tutored with Greek and Latin at seven years. At seventeen he had written an epic. It was in 1565 that he met Lucretia and Leonora, sisters of the Duke of Ferrara, at the court. With them he lives in close friendship, and for them he entertains the loftiest admiration. While at the ducal court, he hears that his great poem has been published by stealth in an Italian city, without his authority or the corrections he designed. This unmans him; he imagines himself pursued by enemies, and even draws his sword upon the peaceful servant of the Duchess of Urbina. He is arrested, but, his condition speaking for itself, is given to the care of a physician. Soon he grows worse—he leaves even his beloved manuscripts behind and flies. By and by he begs to be allowed to return; but the evil returns, and he once more roams away to Mantua, Padua, Venice—everywhere fleeing an imaginary pursuer. At last he ventures again to Ferrara, and no one noticing the poor wretch, he abuses the Duke in the presence of his court. For this he languishes long years in a prison cell at St. Anne's Hospital, while, all through the Italian peninsula, six editions of his wonderful poem are enriching the publishers and delighting the people to such a pitch that, until this day, the very peasants know and repeat his musical stanzas. Seven years of dreary confinement ensued long after apparent restoration; but the malady recurs at Florence, and also at Rome. For just as he had reached the fruition of his hopes, and by a solemn act the Pope had decreed his coronation with the poet's laurel on the 25th of April, 1595, that very day the exhausted frame succumbs, and the garlands of honor fall upon the brow of death.

In tracing the history of extraordinary men who have lived in extraordinary delusions, Emanuel Swedenborg must not be forgotten. This

celebrated philosopher, a geologist and a man of scientific learning, filled many offices of distinction in Sweden, from which he voluntarily retired when, as he says, he was introduced to the spiritual world while in London in 1743. For about thirty years he spent his time alternately in Sweden and England, holding converse, as he believed, with heavenly spirits, and receiving their revelations. He imagined that he maintained long conversations with the most eminent of the dead of antiquity. He described with minute detail the form and fashion of the abodes of blessed saints in heaven, and his works fill many volumes. In private life he was honest, learned, virtuous, and a profound thinker. These revelations were received while he was in long bodily trances. He died suddenly of apoplexy, in 1772. You say, perhaps, that he only differed from other lunatics by a purer life and more intense mentality, and has long been forgotten. No, indeed; his church is to-day one of the recognized religious denominations of this country, and there are edifices for Swedenborgian service in many of the largest and most intelligent cities of the United States. Some of his prophecies have been regarded as wonderfully correct, such as predicting a great fire in Stockholm at the very hour of its occurrence. But to one who would inquire farther, it is only necessary to say, that angel and saint and demon, all talk in his books as ordinary men of the eighteenth century did, and all the minute explanations of natural phenomena, alas, are based only upon the rude conceptions of a century ago, and none of his revelations anticipated the truth even as it is known to-day. Yet to this day a million or two of people are enthralled by the fascination of a maniac's dream !

I approach the name of the Colossus of English literature with profound reverence. Never was the truth more deeply illustrated that the mind's great powers lie behind and beyond and immeasurably above the miserable accidents of bodily organization; and yet never was the dividing wall that in the play of fitful disease cuts off the communion of the nobler part, with fallen man, more sadly, but vividly displayed, than in Samuel Johnson. This great essayist, the formative artist of late English, the author of the exquisite *Rasselas*, the compiler of the first great Dictionary of our tongue, which has been a mine of wealth for all its successors—Johnson, the good and great, who bore the ills of fate with such fortitude, maintained his integrity in the sorest temptation, and became the very arbiter of the tongue he spake, by universal consent, *him* we have known; but how is our sympathy increased when we know his inner life. It is full of lessons to illustrate what I would say.

His father was beyond fifty and his mother over forty when they were married. The father was afflicted with melancholy, and only saved from absolute insanity by constant horseback exercise. With a sedentary life he at once relapsed. Samuel was himself scrofulous, and was even taken to London, prayed over, and touched by Queen Anne, but unfortunately it was of no avail. He was blind in one eye, the result of his disease, and subject from his earliest years to moods of the deepest gloom. We are told by his biographer, in significant language, that "his malady broke out, before he left the University, in a cruel form." In his twentieth year it came upon him in a dreadful manner. It happened at Litchfield, in the college vacation of 1729, and he was never perfectly restored. He declared long after that all his labors and enjoyments were "mere interruptions of its baleful influence." Sometimes he was unable to tell the hour by the clock. He walked to Birmingham and back again frequently, in hope to drive away the malady by forcible exertions. He placed his medical supervision in the hands of his godfather, Dr. Swinfen, and was mortally offended when the doctor revealed the truth to his own daughter. Again and again he touchingly laments his constant hovering upon insanity. In writing of the unfortunate poet, Collins, who was in confinement, he says, "Poor Collins! I have often been near his state, and have it therefore in great commiseration."

He would place his hand on all the posts set by the sidewalk in the streets, and if by chance he missed one, he was unhappy until his steps were retraced. He would shut himself up for days, to walk from room to room, sighing and groaning; to go out-of-doors he must take a certain number of steps, and with a certain accustomed foot in a definite place. His grimaces, gestures and mutterings terrified strangers. At a dinner table he would stoop down and twitch off a lady's shoe. He would conceive an aversion to a particular street, and could not be induced to walk there. The poet, Christopher Smart, it is well known, who was afterwards committed to an asylum, exhibited his mental disturbance by falling on his knees to say his prayers in the street. Like him Johnson would suddenly call out sentences of the Lord's Prayer while in a crowded drawing-room, and in the gayest company. With senses morbidly asleep, and imagination morbidly active, his life was one long torture. Many a man so wretched would have shot or hanged himself. He had the appetite of a beast of prey; were the meat spoiled or the butter rancid, so much the better; he would devour until the veins of his forehead swelled to repletion. Hallucinations of hearing

pursued him ; miles away again and again, he thought he could hear his mother call him by name

Yet he struggles manfully ; he feels that he is lost, unless by stern self-control he may stay the on-rushing tide. He drinks less wine, and never at night any more ; he struggles to moderate his appetite, seeks exercise, and keeps his mind busily employed. He marries a widow as old as his own mother, short, fat, coarse in manners and in features, painted, deeply dressed in gaudy colors, and void of grace. But, with his one eye, and that short-sighted, he pronounces her lovely, is a true and loving and noble husband, and long after he buries her in her sixty-fourth year, speaks of her to his friends as “ Pretty creature ! ”

He writes *Rasselas* for a hundred pounds to defray the expenses of his mother's funeral. As the years go by oblivion creeps over, and he is wrapped in complete idleness and despondency. When in Kent, September 18th, 1768, he writes : “ I have now begun the sixtieth year of my life. How the last year has been passed, I am unwilling to terrify myself with thinking. I was disturbed at church this day in an uncommon degree, and my distress has had little intermission. This day it came into my mind to write the history of my melancholy. I know not whether it may not too much disturb me.” Eight years after he writes : “ When I survey my past life, I discern nothing but a barren waste of time, with some disorders of body, and disturbances of mind very near to madness, which I hope He that made me will suffer to extenuate my many faults.”

He had the gait of one in fetters ; his habits were uncouth, voice loud and imperious, temper violent, with a great readiness to take offense. He advises Bosworth against melancholy in these words, good for all times : “ If you are idle, be not solitary ; if you are solitary, be not idle.”

He loved poor Savage, another wretched poet and unhappy man of genius. The wildest romance would barely equal this man's real fate. As a famous writer says : “ An earl's son and a shoemaker's apprentice, he feasted among blue ribbons in St. James' Square, and lay with fifty pounds weight of iron on his legs in the condemned ward of Newgate. He dined on venison and champagne when he might borrow a guinea ; to-morrow he appeased the rage of hunger with scraps of broken meats, and lay under the piazza of Covent Garden, or as near as he could get in the ashes of a glass house.” When these sons of misfortune parted it was in tears—Johnson to his long internal strife, Savage to die heart-broken, in the west of England, in Bristol jail.

In 1784 Dr. Johnson left his friends at Litchfield one morning, and set off at an early hour, returning at night weary and drenched with rain. There was a silence—no one ventured to ask the reason. After

a solemn pause, he said that fifty years before, during an illness of his father, he had refused that father's request to ride to Uttoxeter market, and take his accustomed place at the stall where he sold books—all out of boyish pride. To do away with this sin, he said, that day he had gone, and, indeed, had stood in the market-place bareheaded in the pelting rain for one hour, before his father's ancient stall, exposed to the jeers of the populace, performing solemn penance in the sight of heaven. Monumental marble now represents him in that act of filial devotion. The end was soon to come—rapidly recurring fits of anger and melancholy are succeeded by a stroke of paralysis; for awhile he cannot speak and cannot write. Dropsy, so common with the insane, closed the scene. The next year, December 13th, 1784, the fatal moment, which had been an unutterable dread all his life, came, to find him in serene frame, patient and gentle, his noble mind, his true self, ready for translation to a world of peace, with the dark clouds of a life-time rolled away forever.

The temptation to dwell upon the characteristics of those whom we may well term the illustrious insane may carry us too far, but in certain cases it is indispensable to the faithfulness of the picture to portray the details thereof.

The case of the renowned Dean Swift I need not dwell upon. He was afflicted through life with vertigo—the result, he says, of cerebral congestion caused by eating a hundred golden pippins at one time. Irritable, strange, gloomy—at last he went months without speaking. His great cruelty, too, and extraordinary perfidy to the women who loved him, foreshadowed his future. St. Patrick's Hospital for lunatics was built and endowed by him for the people of Dublin, at a cost of eleven thousand pounds. This institution still exists, yearly working out its share of blessing, while its great founder moulders in the grave. For the last four or five years of his life he fell into a state of idiocy, locking his lips in the silence of the tomb.

*(To be continued.)*

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## AMERICAN DENTAL ASSOCIATION.

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MEETING OF AUGUST, 1876.

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Dr. Barker spoke of several medicinal substances brought to the notice of the dental world during the past year. He had found decided success in treating necrosis and alveolar abscess by the use of the sulphites and hyposulphites. In the case of a young mother, whose teeth

had greatly degenerated since the birth of her first child, he had given three tablespoonfuls daily of the syrup of lacto-phosphate of lime, filling—where filling must be done—with Hill's stopping, and could plainly discern a decided improvement in the teeth.

He felt certain that consolidation does take place in adults. Drs. Dixon, Hunt and J. S. Smith had noticed this fact, and the latter, too, highly approved of the use of the lacto-phosphates of lime; while Dr. Hunt thought other forms of lime better adapted for the purpose sought. Dr. Kingsbury had made use of the hypophosphates, but had not had the success in their use he had anticipated. He would advise those articles of diet which are richest in phosphates as best adapted to build up the teeth—they being more readily assimilated.

In this view—that natural rather than manufactured substances are most readily assimilated, and can be most fully relied upon by the practitioner—Dr. John Allen heartily concurred. Dr. Dean related some experiments in the use of arsenic, which indicated to him that it is absorbed and passed into the circulation, but is not antiseptic in its action.

Dr. W. N. Morrison, of St. Louis, in a paper, called attention to a tooth without pins, devised and patented by Dr. Hall, of Ohio. Dr. Morrison regarded the shapes, sizes and colors a close approximation to nature's own work.

Dr. W. C. Barrett, Chairman of the Committee on Mechanical Dentistry, presented, through Dr. D. D. Smith, a report on cheap bases for artificial teeth. The demand of the time is for good mechanical work at a price that the laboring classes can afford. Rubber and celluloid were compared by the writer, their comparative advantages and disadvantages weighed, and the conclusion finally drawn that, independent of the legal complications which hedge in the use of rubber, celluloid is the preferable base for artificial teeth. Dr. Smith, in the discussion which followed the reading of the paper, lamented the feeling of the profession towards mechanical dentistry, asserting that the better class of dentists had "washed their hands of it," and gave their time to operative dentistry only, with the result that might be expected. The various bases were rapidly commented on by the speaker, who evidently felt that honorable places should and will await those who may strive for excellence in this branch of professional labor.

Etiology was the next subject presented, and Drs. M. H. Webb and H. L. Sage, of the Committee to which this subject was referred, each read lengthy reports upon it. To do these reports justice, they should be reproduced in full, as we trust they will be in the Proceedings of the So-

ciety when they shall be published. They would take up too much room to be properly introduced here. During the final and evening session it was determined to hold the next annual meeting in Chicago.

The officers chosen for the ensuing year are:

President—George W. Keely, Oxford, O.

First Vice-President—C. N. Pierce, Philadelphia, Pa.

Second Vice-President—Corydon Palmer, New York.

Corresponding Secretary—James H. McQuillen, Philadelphia, Pa.

Recording Secretary—C. Stoddard Smith, Springfield, Ill.

Treasurer—W. H. Goddard, Louisville, Ky.

Added to the Executive Committee—G. H. Cushing, J. H. Crouse, A. L. Northrop.

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### BOOK NOTICES.

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A HISTORY OF DENTAL AND ORAL SCIENCE IN AMERICA. Prepared under direction of the American Academy of Dental Science. Philadelphia: S. S. White, 1876. Octavo, 271 pages. Price, \$2.50

This Centennial offering of the American Academy to the profession is in every way worthy of a cordial reception.

The actual work—editorial, and of compilation—was placed in the hands of Mr. James E. Dexter, of New York. In the short time given him—about four months—he seems to us to have accomplished wonders. His manuscript was carefully revised by a committee of the Academy, who say in the preface, “The book has, perforce, been hastily written; but, as far as possible, no exertion has been spared to insure its accuracy. The committee has labored diligently and earnestly in the revision of Mr. Dexter’s manuscript, and it is thought few errors of statement will be found. Expression of opinion by the writer or committee has been sought to be scrupulously avoided; and no unnecessary criticism of persons, books or methods has been admitted—the effort being to make the work strictly historical, and in no sense didactic. That it contains all the facts cannot be hoped; but that most of its contents will be thought worthy of a place in history, that it will prove of interest to the present generation in enlightening them as to the work of their predecessors, and that it will be of value to the future historian and essayist in directing him to sources of information, and as a preservative of fast vanishing facts of the earlier days of American dentistry, is fully believed.” In all of this expression of opinion we most heartily concur, and must congratulate Mr. Dexter on the very creditable manner in which he has

executed his work; particularly are we pleased with the constant and full references that he everywhere makes to the original sources of authority for his statements. The project of the publication of such a work was an excellent one, the time auspicious, and the management of the matter fortunate. We only fear (and that simply because of the limited time allowed to Mr. Dexter) that all matter appropriate to a complete history of American dentistry has not been secured, and wish that the industrious editor may still extend his labors in the same direction. The profession is yet so young, that it must still be possible to learn all that is important about its rise and progress from those who have seen its earliest representatives, and the opportunity—if any such work is still undone—ought not to be permitted to pass by. Mr. Dexter was fortunate in having constant and easy access to a library of dental literature which, we suppose, is unequaled in its treasures of both old and new publications. We find very few pages from which we pass untempted to reproduce a little for the information and pleasure of our readers; but that would not do, so we will content ourselves with naming the various subjects treated of in its twenty-eight chapters, and advising each reader to own a copy of the book. The chapters of the work are:

Introduction.	Files—Wheels—Disks.
Artificial Teeth.	Filling Instruments.
Base Plates.	Instruments for Extraction.
Attaching Artificial Teeth to Bases.	The Operating Chair.
Securing Artificial Dentures in the Mouth.	Treatment of the more important Diseases,
The Laboratory.	Injuries, and Natural Defects of the Oral
Simple Metallic Fillings.	Cavity.
Plastic Fillings.	Dental Associations.
Treatment of the Dental Pulp.	General Statistics.
Anæsthetics.	Dental Schools and Colleges.
Extraction and Replantation.	Dental Legislation.
Filing and Regulating.	Standard (Dental) Works.
Irregularities.	Periodicals.
Drying Mouth and Cavities.	Dental Education.
Cutting and Drilling Instruments.	Table of Dental Census. [ED.

**BREARLEY'S SYSTEMATIZER.** Published by W. H. Brearley, of Detroit, Mich. Price, \$2.25, postage paid. A Manilla paper book of both leaves and stubs, containing 365 leaves, dated so that each day has a leaf.

The user is expected to lay memoranda calling attention to matters requiring attention at particular days of the month in the book at the leaf dated for such day, and, by daily reference to the Systematizer, avoid neglect of any duty on the day appointed for its performance.

AN ANATOMICAL DESCRIPTION OF THE PERMANENT TEETH. Written at the request of the St. Louis Dental Society. By H. Judd, M.D., D.D.S. A pamphlet of 28 pages. Price, per copy, 25 cents.

Dr. Judd says in his preface: “. . . Such a description of these teeth (permanent) as a dentist ought to be perfectly familiar with is not furnished in our text-books, though some efforts have been made in this direction by other writers; but we have been unable to obtain their works. In all of the anatomical descriptions of the teeth found in our text-books, many of the most important points, such as a description of the fissures, sulci, fossæ, ridges, pulp cavities, etc., have been almost entirely ignored.” It is the purpose of this little book to supply this want, and all will agree that the St. Louis Dental Society could have committed the work to no more able or experienced hands than those of the respected author of this pamphlet. The illustrations are probably sufficiently clear to enable Dr. Judd to make himself understood, but we wish they had fallen into the hands of a more artistic engraver.—En.

## NOTES.

### South Carolina State Dental Association.

In accordance with an Act of the General Assembly, entitled “An Act to regulate the practice of Dentistry and protect the people against empiricism in relation thereto in the State of South Carolina,” the South Carolina State Dental Association and the State Board of Dental Examiners will meet in the city of Greenville, at the Dental Rooms of Drs. Norwood & McDavid; at 8 P. M., on the second Tuesday in June, 1876. The following Committees will be expected to make a report on the subject assigned:

COMMITTEE ON MEMBERSHIP.—Dr. J. W. Norwood—Caries. Dr. J. B. Patrick—Premature Loss of Teeth. Dr. W. S. Brown—Pivot Teeth, or the Mirror, (either.) Dr. J. S. Thompson—Our Correspondence. Dr. D. L. Boozer—Articulation.

COMMITTEE ON MECHANICAL DENTISTRY.—Dr. B. A. Muckenfuss—The Best Base. Dr. W. S. Reynolds—Selection of

Artificial Teeth. Dr. E. C. Jones—Temporary Plates. Dr. J. H. Alexander—Objections to Artificial Teeth. Dr. S. M. Dinkins—Partial Sets.

COMMITTEE ON OPERATIVE DENTISTRY.—Dr. C. C. Patrick—Mechanical Appliances in Operative Dentistry. Dr. J. R. Thompson—Conditions Demanding Contour Work; Cause of Failures. Dr. H. B. Rice—Diagnosis and Treatment of Pulpitis and Periostitis. Dr. T. Berwick Legare—Anæsthesia, or When to Extract, (either.) Dr. D. R. McCallum—Removing Tartar.

EXECUTIVE COMMITTEE.—Dr. J. Q. McDavid—The Use of Phrenology to the Dentist. Dr. J. W. Crymes—Electricity. Dr. W. A. Williams—Impressions. Dr. H. D. Wilson—Diagnosis. Dr. B. H. Teague—Salicylic Acid.

To elevate the standard of a noble and humane profession is the object of this Association.

This is the sixth year of our organiza-

tion; we are recognized a corporate body, and must prove ourselves worthy of the confidence and trust reposed in us. Those who are members will attend if possible. Those who are not, we feel assured will avail themselves of the earliest opportunity to join. You are earnestly invited to attend. Bring an account of your success, that others may be encouraged; tell of your difficulties, that you may be aided to overcome them.

G. F. S. WRIGHT, D.D.S., Pres., Columbia.

J. W. NORWOOD, First Vice-Pres., Greenville.

B. H. TEAGUE, D.D.S., Second Vice-Pres., Aiken.

J. S. THOMPSON, D.D.S., Cor. Sec., Abbeville.

THEO. F. CHUPEIN, D.D.S., Rec. Sec., Charleston.

T. W. BOUCHER, Treasurer, Cheraw.

#### **Annual Commencement of Maryland Dental College.**

The annual commencement of the Maryland Dental College was held last night in the concert hall of the Academy of Music. An orchestra furnished instrumental music and Dr. C. H. Cockey played a flute solo of his own composition. Rev. Dr. Swentzell offered prayer, and addresses were made by Dr. J. C. Green and Mr. A. W. Ross.

The graduates were as follows : Preston A. Ames, Maryland; B. F. Barclay, Pennsylvania; John D. Clark, North Carolina; H. Olie Duerson, Virginia; George D. Fouke, Maryland; Civileon Fones, Connecticut; Henry A. Gaylord, Massachusetts; P. L. Hull, New York; Ernest F. King, Maryland; A. P. Krouse, Maryland; William B. Mann, Maryland; Geo. S. Meigs, New York; Charles J. Peterson, Iowa; Frank H. Paign, New York; A. W. Ross, South Carolina; J. B. L. Swentzell, Maryland; J. B. Thresher, Connecticut.

The faculty of the College, nearly all of whom were present, comprises Drs. S. H. Williams, B. F. Coy, H. W. Foster, E. P. Keech, R. B. Winder, S. M. Field, B. W. Barton, A. P. Gore, C. F. Brockett, H. G. Ulrich, C. E. Duck, and T. M. Murry.

After the exercises the faculty and students, as also their friends, engaged in a hop until long after midnight.

*New York College of Dentistry,  
New York, March 2nd, 1877.*

#### **JOHNSTON BROTHERS :**

DEAR SIRS : The Eleventh Annual Commencement of the New York College of Dentistry was held at Chickering Hall on Tuesday evening, Feb. 27th, 1877.

The degree of D.D.S. was conferred by Dr. Wm. H. Allen, President of the Board of Trustees, upon the following named gentlemen :

Geo. P. Bliven, of Brooklyn, N. Y.

James R. Boyd, of Natchez, Miss.

Geo. S. H. Comins, of Erving, Mass.

Curtis S. Chittenden, of Hamilton, Ont.

Edward T. Dobbs, of Winona, Minn.

Frank H. French, of Gt. Barrington, Mass.

John Gordon, of New York City.

George Haskins, of Newark, N. J.

James H. Hoag, of Yonkers, N. Y.

Geo. S. Kendall, of Ridgefield, Conn.

Geo. H. Newbery, ———.

Wm. F. Thompson, M.D., D.D.S., of San Francisco, Cal.

Fred. G. Wilkes, of New York City.

The Faculty Prize was awarded to James R. Boyd, D.D.S. The address to the graduates was delivered by Prof. Frank Abbott, M.D., and the Valedictory by Geo. S. H. Comins, D.D.S. The written examination in this College takes the place of a Thesis. The number of matriculates during the past year is eighty-two (82).

Yours very truly,

FRANK ABBOTT, M.D.

JOHNSTONS'

# Dental Miscellany.

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## TREATMENT OF IRREGULARITIES WITH INCLINED PLANES AND LEVERS.

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By NORMAN W. KINGSLEY.

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The inclined plane was one of the first mechanical forces adopted for regulating teeth, and was much recommended in the earlier text-books.

Its application is probably well known. It consists simply of a plate adapted to the jaw, opposing by a sliding surface the offending teeth. For example: the incisors of the upper jaw may be shutting inside the lower teeth. To correct the deformity, an inclined plane may be made of any of the materials which are used as a base for artificial teeth accurately adapted to the incisors of the lower jaw, with a process extending upward and backward so that it shall impinge upon the lingual surfaces of the offending superior incisors at every occlusion of the jaws.

Such an appliance is shown in Figure 1, letter A. The objections to this mode as a sole reliance are many. It will be observed that there can be no movement expected of the misplaced teeth unless there is a forcible occlusion of the jaws, the result being that it almost always defeats its own objects; even when a movement takes place, it is only after a tedious and prolonged wearing of the fixture. The teeth will not be held impinging on the incline except by a constant effort of the will. The length of time required is also a serious objection. The masticating teeth being held apart for a long time will be pretty certain to elongate and the proper articulation of the teeth destroyed. To avoid this, it has been recommended to build up blocks or gags on the molar teeth which can be used in mastication.

These objections, among others, condemn the principle as unreliable for general use, but as an accessory to other fixtures it may often prove a valu-

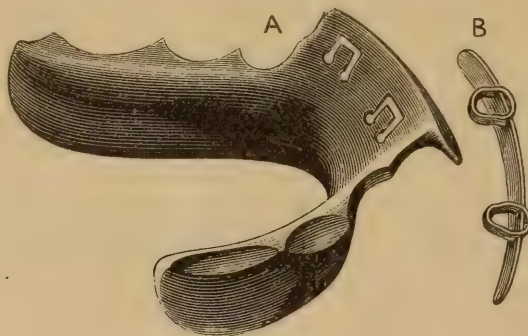


FIG. 1.

able adjunct. Figure 1, letters A and B, show a combination of an inclined plane with elastic ligatures, which was used to correct an irregularity of both upper and lower incisors, and the same apparatus was used as a retaining plate when the change in position was completed. The case was one where the superior incisors shut within the inferior ones in the mouth of a lad of fourteen. The fault was in both jaws. The lower teeth were too prominent and the upper ones too retreating. To have advanced the upper ones until they covered the lower ones would make the mouth too full, and the reverse would be the result if the lower ones were retreated behind the upper ones. Both sets being at fault, both were operated upon. The fixture was made to be worn on the lower teeth, and it will be observed that the incline seems to stand unnecessarily forward of the receptacle for the lower teeth. When first adjusted, the lower incisors were flush with the front edge of the incline, and the upper incisors caught on the upper front surface.

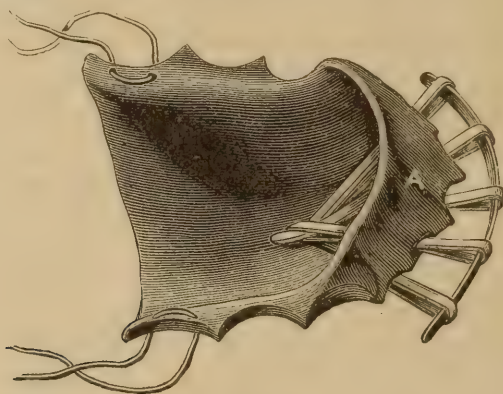


FIG. 2.

The fixture was cut away freely behind the lower incisors, to permit of the inward movement, and a narrow gold band was carried across the

front as seen in the engraving, letter B. Elastic straps were drawn between the teeth connecting the two, and the lower teeth were drawn back simultaneously with the advancing movement of the upper ones.

Figure 2 shows another application of an inclined plane somewhat out of the ordinary course.

It was adapted to the inside of the superior dental arch, and the inclined surface marked A projected below and caught the inferior incisors.

The object was, not to protrude the lower teeth, but to change or jump the bite in the case of an excessively retreating lower jaw.

In the engraving the appliance is shown bottom up, to exhibit more clearly the attachment of some elastic ligatures which were caught on a hook in the roof of the plate, and were drawn out through corresponding openings, and connected with a gold bar worn across the front of the superior incisors to reduce their prominence.

The fixture was worn constantly, and in a few months produced the desired result. The objection urged against the use of an incline, because the time required had a tendency to alter the articulation of the teeth, was in this case an argument in its favor, and an advantage, because a new articulation was desired, and the incline, as adapted, offered no opposition to the antagonism of the teeth.

The principle of the inclined plane is always operating in the mouth, and may often be taken advantage of beneficially, while at other times it will tax our ingenuity to the utmost to overcome its powerful influence. In the case of the superior incisors shutting within the lower, after they have been brought forward so as to barely catch over the lower ones, then the principle of the inclined plane becomes available in completing the operation.

The points of the lower teeth, catching within the upper ones, strike their natural inclined surfaces, and nature may be relied upon for the rest.

In moving the bicuspid teeth of the upper jaw, either outward or backward, all that is accomplished by fixtures may be entirely overcome by the articulation of the lower teeth forming an inclined plane, and thus acting upon the upper ones to return them to their former places.

*Levers* do not come into such universal application as do some other powers; the principal objection being, that the limited space of the mouth does not permit their unrestricted movement.

Levers may be used to advantage in revolving teeth in their sockets; and for this purpose a band around the tooth is necessary, which will not slip, and the lever will be attached to the band. Force may be

brought against the long arm of the lever by ligatures connected with convenient teeth. Such an appliance will pretty surely accomplish the result, but it can generally be obtained with a less cumbrous fixture.

Levers may often be advantageously used on the outside of the arch, to press gently against some offending tooth, and thus drive it into its desired position.

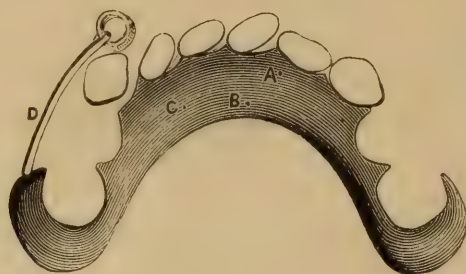


FIG. 3.

Such an apparatus is shown in Figure 3. The lever, marked D, was made of moderately stiff gold wire, anchored in a vulcanite plate in a case where the first permanent molars had been extracted. The lever in this instance was required quite as much to get an attachment for elastic ligatures, as to press in the outstanding canine. If the canine had been the only tooth out of place, it could readily have been brought in with a strap attached to the vulcanite; but several of the incisors needed moving and twisting. By getting an attachment at the end of the lever, a variety

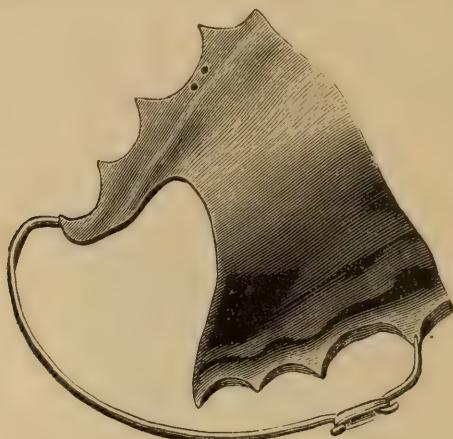


FIG. 4.

of work could be accomplished, according to the connection with the vulcanite. For example: If the elastic were brought between the two centrals and tied at A, the action would tend to move out one tooth and depress the other. If the point of attachment were changed to B, the influence would be changed, and so again if transferred to C.

In like manner, if carried between the lateral and central or lateral and canine, there would be a difference in the force exerted according to the point of attachment.

Figure 4 illustrates a method of reducing one or more teeth to a regular line by means of a wire or bow going around the outside, and acting partly as a lever and partly by the force of elasticity. The engraving sufficiently explains the action. The plate is of vulcanite and an elastic loop acts to contract the circle by drawing the ends of the wire together. Such an appliance would act only on the teeth, but in the following illustration, Figure 5, a similar principle is used in a case of maxillary fissure connected with a fissure of the palate.

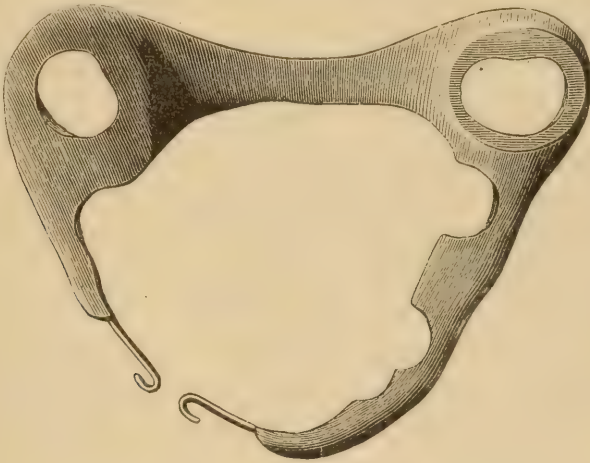


FIG. 5.

There was a wide gap between the lateral incisor and the canine tooth, and the opening extended through the alveolar arch and into the nasal passage.

It was desired to bring the maxillæ into contact, and a fixture like the last would only act upon the teeth, tending to give them a wrong inclination. This fixture was made to embrace the gum as well as the teeth with the wire running through the length of the vulcanite to give both stability, and the terminal hooks were drawn toward each other when *in situ*, with silver wire wound around and twisted with a pair of pliers. In the process of twisting, the gap was seen to perceptibly close and ultimately came together and united.

## THE ANNUAL MEETING OF THE ALUMNI ASSOCIATION OF THE BALTIMORE COLLEGE OF DENTAL SURGERY.

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The annual meeting of the Alumni Association of the Baltimore College of Dental Surgery was held in the college building on March 9th, 1877. The President, Dr. Cockerille, of Washington, D. C., after calling the meeting to order, delivered an address, which was listened to with marked attention. A letter from Dr. W. W. H. Thackston, of Virginia, of the class of 1842, was read by the Secretary, stating that unavoidable detention—illness in his family—prevented his being present, and that he had forwarded the MSS. of the address he was at the last meeting elected to deliver, with the request that Professor Gorgas read the same, which was accordingly done, and at its conclusion a vote of thanks was unanimously tendered to Dr. Thackston for the very able manner in which he had treated the subject of the Relation of Medical and Dental Colleges towards the Profession of Dental Surgery. Also a resolution for its publication was adopted.

The Corresponding Secretary, Dr. William B. Wise, of Virginia, stated that he had sent out a very large number of invitations to this meeting, and was in receipt of letters from many alumni, stating their hearty endorsement of the Association and its objects, and expressing sincere regret at not being able to be present. One of the letters was from Dr. Carlos Gardner, of Madrid, Spain, wishing the society God speed; another from Dr. Carl F. Wagner, of Stuttgart, Germany, expressive of like hopes and regrets of absence.

The following resolution was offered by Dr. Cockerille:

*Whereas*, The good of our profession is our highest aim, be it therefore  
*Resolved*. That no member of this Association shall attend any Society or Dental Convention of any kind in which any person or persons are allowed to occupy seats as members who have not received diplomas from some reputable dental college.

This resolution was adopted without debate, and afterwards, on motion of Dr. J. B. Wood, of Virginia, reconsidered. Considerable debate arose as to the propriety and expediency of such a measure at this stage of dental progress. Dr. Wood thought that such a resolution would shut out from association with us as dentists some of the confessedly best men of the profession—men whose interests were as great in the advancement of the cause of dental education as most of those who held diplomas.

Dr. John Allen, of New York, the inventor of the "Continuous Gum,"

made some objections to the resolution, as too sweeping in its scope. "There were many men," he said, "in the profession—men at whose feet we might be proud to sit and learn—who had given to dentistry much of its dignity, who had not diplomas, some of them for the simple reason that at the date of their entering the profession there were no colleges."

Prof. T. S. Latimer took the ground that, circumstanced as the profession is, it could not afford to take such a step as this, as it amounted simply to cutting ourselves off from participating in organizations in which, by remaining, we might, later in their history, exercise a controlling influence.

Prof. H. R. Noel took substantially the same ground, urging that it would be unwise to isolate ourselves so early in life as a profession, and that we had better, by earnest effort in these societies, and in every way, work up the tone of the profession to a higher pitch, and so gradually pave the way for such a state of affairs.

The debate was participated in by others, the general impression among those speaking being that the sentiment in the profession was hardly ripe for such an advanced step; and that the societies could hardly afford to dispense with many of those who would be shut out by this resolution.

Prof. Hodgkin offered as an amendment:

*Provided*, That such person or persons commenced the practice of dentistry less than twenty (20) years ago;

and urged that this amendment would probably relieve the resolution of its objectionable features. It was not intended to strike at the honor of those who had, years ago, assisted in laying the foundations of our profession—who had grown gray in its service, and won honor such as any graduate might court; but it was hoped that some plan could be adopted which would shut out from competition with us the vast crowd of raw office students, who, after a few weeks' or months' study in the laboratory of some cheap dealer in vulcanite, "set up shop" for themselves, and become, in so far as the public discrimination could go by seeing the outside, dentists—the peers of not only those who had toiled for diplomas, but of those who had won distinction without.

The resolution was finally laid on the table.

Prof. E. Lloyd Howard, who had been announced to deliver an address on "Anæsthetics," owing to the lateness of the hour at which he appeared (having been detained by official duties), stated that he would offer at the banquet at night some remarks on that subject, and would not now take up the time of the Society.

Prof. Hodgkin offered the following resolutions, which were adopted:

*Resolved.* That a committee of three be appointed, whose duty it shall be to adopt an "Order of Business" for the expedition of the affairs of this Society, this committee to report at the next annual meeting. And this committee is hereby empowered to arrange with members of this Society, and with others, for the reception and reading of papers on subjects of interest to the profession. (Committee: Drs. Howard, Gorgas and Massamore.)

*Resolved.* That a committee of three be appointed by the President, whose duty it shall be to consider and mature a plan for the organization of some system of life insurance among the members of this Society, this committee to report at the next annual meeting. (Committee: Drs. Hodgkin, Latimer and Davy.)

The following resolution by Dr. Cockerille was adopted:

The President shall appoint a Memorial Committee, consisting of three members of this Society, whose duty it shall be to inquire into the circumstances of the death of any of its members, and make such memorial of the life and services to the profession of such deceased members as may be fitting and proper; such memorial to be put in the records of the Society.

The Society then proceeded to election of officers for the ensuing year, resulting in the re-election of those at present holding positions.

The Society then adjourned, to meet informally at the Academy of Music; and at the conclusion of the Commencement exercises proceeded to the Masonic Temple, where a banquet had been provided, and where, falling to it, the members discussed the quality of the viands bountifully spread before them, and indulged in the discussion of subjects grave and gay until the "wee sma' hours."

Among the toasts responded to with happiest effect was one on Professors Chapin A. Harris, Horace Hayden, Thomas E. Bond, H. Willis Baxley and Washington R. Handy—the founders of American dentistry—by Dr. Wm. H. Dwinelle, of New York, whose reminiscences of the early days of the College, and of the prophetic inspiration of Prof. Chapin A. Harris, were exceedingly interesting.

In response to the toast, "The Dental Profession—as the Discoverer of Anæsthesia, the Benefactor of the World," Prof. E. Lloyd Howard made a few condensed and forcible remarks on anæsthetics, showing most clearly that the world owed to the dental profession a debt of gratitude for the discovery of sulphuric ether, and claiming in the most positive manner, for Wells and Morton, the honor of conferring this priceless boon—anæsthesia—upon suffering humanity.

He considered the discovery of chloroform as a matter of course, sim-

ply, after the way had been paved by the application of ether and nitrous oxide gas. The dental profession justly claim, and as a physician he cordially awarded to them, the honor of being the pioneers in this matter.

Prof. Henry A. Noel, whose failing health had prevented his taking his usual share of college work during the past year, was present; and in response to a toast, took the floor in an entertaining reminiscence of his first essay as a teacher of dental physiology, and paid an eloquent tribute to the memory of Prof. A. Snowden Piggot. He summed up the essentials of success as being hard work, steady application and continued effort, and gave it as the result of his observation and experience that no success worth the name was obtained in any other way.

Prof. T. S. Latimer, in response to the toast, "Woman," paid an eloquent tribute to that ideality to whom all mankind must give homage, and in an address full of poetical and worshipful adoration of the tender sex, demolished all reasons for his being a bachelor.

Pleasant and appropriate remarks were made by Prof. Thomas Opie, Dean of College of Physicians and Surgeons; Professors T. R. Brown, Lynch and Bevan, of that college; by Drs. John Allen, of New York; S. J. Cockerille, of Washington; D. McFarland, of District of Columbia; A. J. Volck, George A. Mills, T. A. La Far and William H. Hoopes, of Baltimore; C. H. Reynolds, of Canada; M. W. Williams, of Tennessee, and others.

At three o'clock A. M., after having spent a most delightful evening, the Society adjourned, to meet in the college building on the morning of the next Commencement day.

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## MEETING OF THE FIRST DISTRICT DENTAL SOCIETY.

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HELD AT THE RESIDENCE OF DR. JOHN ALLEN, NO. 7 WEST THIRTY-THIRD STREET, NEW YORK, TUESDAY, MARCH 6, 1877. .

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The meeting was called to order by the President, and the minutes of the last meeting read by the Secretary, and approved.

The President announced that a number of the members were absent at the exhibition of the Microscopical Society, and as some now present might also desire to attend that exhibition, they would proceed with the discussions as rapidly as possible.

A letter was received from Dr. Hunt, of Washington, concerning the Cummings patent suit, reporting progress.

Also, a communication from Josiah Bacon, in reference to the conditions on which licenses would be granted.

The Committee on Clinic being absent, Dr. J. S. Latimer said that he was requested by Dr. Atkinson to state that they had a very successful clinic, over fifty persons being in attendance, some from considerable distances.

Dr. Reynolds built down a superior left cuspid round a large screw that he inserted in the root, and packed gold about it, which was very soft and yet cohesive. He used, in packing it, the electric mallet, but finished the operation with an automatic.

Dr. Bodecker found a very sensitive cavity that he proposed to fill—so sensitive that he applied oxychloride of zinc, to remain a couple of weeks.

M. B. Toledo filled with gold a superior left bicuspid, anterior proximal grinding, packing with the automatic. He had capped the pulp and filled over the cap with extra cohesive gold.

Dr. F. H. Lee filled a cervical cavity of a superior incisor, using the apparatus that Dr. Clowes exhibited to the Society at a recent meeting. He used cohesive gold.

#### PRACTICAL HINTS OF VALUE TO THE DENTIST.

Dr. J. S. Latimer said: I have had two cases lately of spontaneous devitalization of the pulp. Strange as it may seem—which, I presume, accords with the practical experience of others—these strange cases come in schools, hardly ever single. My family physician came to me a few days ago with a tooth that had been filled seven years before. Pulp not exposed, and healthy, not a very large filling in it, and yet the pulp was utterly dead. Drilling in at the cervix with a small drill gave exit to a drop of pus. A day or two afterwards a lady came who had been confined to the house with illness during the winter, and she had a bicuspid in which gold filling had been inserted by myself three and a half years before. Both were inferior bicuspids. The usual course was pursued in both cases. I have seen other cases in which there was no filling, and no cavity in the teeth, and yet spontaneous devitalization from lowered vitality. Both cases were relieved temporarily by the perforation.

Another idea. I have been operating with my chair close alongside of another chair, and some of my patients have been rendered nervous by the nervousness of my co-worker's patients, or something else, and at least one or two of them have gone elsewhere to get their operations performed. I speak of this as noteworthy, and may have something to do

with our determinations to take chair room in the same room with another dentist.

I want to speak of celluloid. I find that the blanks they make do not contain material enough in the centre, but are spread out so much that I am obliged to cut off from the heel of the blank enough to spoil my case when I get it done. The blanks ought to be thicker, and not spread out so much. I would rather have it of the shape of a marble than flattened out so. I have complained to the celluloid company of this matter, and as they will not change, I have made my last plate with it. The high temperature and moisture so soften the plaster casts that there is a crushing down of the plaster, so that the plate will always come out thicker than the base-plate of wax or gutta-percha, and on that account there is a misfit, and a waste of material. Finding that there was not enough material in a recent case, I put on two additional pieces, and then one piece that had been soaked in alcohol until it was soft, and screwed the cast together again. I found when it came out that these two additional pieces had imbedded themselves in the plaster. They had attached and incorporated themselves with the old plate, which had been scraped off, and I received no benefit from any except from that piece that had been softened in alcohol, and that, on account of the shrinkage on the surface, caused subsequent warpage.

Dr. Miller: I have tried celluloid some, and have not found the difficulty that he speaks of. I use dry heat, and never have any difficulty in regard to them. I have never had any difficulty in its springing, for as soon as I take it out of the plaster, I put it in water. I always advise the patient to place it in water when out of the mouth. I have not seen so much advantage in the darker color as I have in the light color; that I have seen turn quite dark.

Dr. John Allen: It occurred to me that it might not be inappropriate, in connection with the subject under consideration, to refer to systemic diseases. I have here a specimen removed from a lady's mouth, and she was not aware but it was all right enough, yet you see the deposition of tartar there has got very hard on that side, and in attempting to take out the tooth, both came out together, united as you see them. We find that there are those who are sufficiently careless to permit such deposits as that upon the teeth without, apparently, knowing or caring much about it. She did not seem to know but it was all right. The cause is evidently systemic. I have found that there are certain systems which may be suffering from certain diseases, and yet no predisposition at all to the deposition of tartar upon the teeth. There are others, again, where

the secretions are so viscid that tartar will be deposited rapidly. It will even deposit upon artificial teeth. I have seen it largely deposited upon artificial teeth, so that it is not owing to the condition of the teeth themselves, but is the result of a diseased action in the secretive glands, that throw off this substance that produces the deposit, very much like lime is found in the tea-kettle. In limy sections of the country you will find that, where the water is impregnated with lime, there will be a large deposit of lime in the kettle that is used for heating the water. So it is with the teeth, and it would be well if we could arrive at just that condition of the system that prevents that secretion. I have not yet been able to define it sufficiently clear to see what is the peculiar condition of the system, in all cases, that will cause the secretions to deposit such a substance as you see in that case. Therefore I think it would be well to institute inquiry, and see if we can find out what peculiar condition of the system it is, and what peculiar condition the salivary glands are in, to produce that deposition on the teeth.

I would like to call the attention of our profession to the history of the art, with special reference to the teeth. We find that there are whole nations that separate the teeth at an early period, and file them, so that they are like the teeth of a saw, and yet, from the history of those nations, they do not lose one tooth while we lose thousands. Now I think we should be a little careful, and not take a decided stand against any one particular practice. Circumstances alter cases, and although there are cases where it would be improper to separate the teeth, yet there are many other cases where it would be highly proper, and I think that a conservative course is decidedly better than a fixed rule that cannot be varied. Now one man's practice is one thing, and another another. I recollect that a distinguished painter, who was painting to the life, would do what others could not. Said one of his intimate friends to him one day: "How is it that you get such perfect results from your paintings, while I use the same brushes, the same paint, and the same copies, just as you do, as near as I possibly can, and yet I cannot produce such results?" "Well," he said, "I always mix brains with my colors."

Now, gentlemen, that is very important. We should mix brains with our operations, and in every case we should use our best judgment.

Dr. J. S. Latimer: Not long ago I had two of my own teeth separated quite freely, and I propose, if they do not behave better, to have their contour restored. I shall certainly give my patients the treatment that I find good for myself. What matters it, even if we save the teeth longer, if we lose the use of that side of the mouth for masticating purposes, on account of the irritation of the gums by the crowding of the food there?

Dr. Odell: When I want a permanent filling I use gold. If I have to put in a temporary filling I would just as lief put in a gold filling as anything else, if the patient will only pay for it; and it is quite as easy to take it out. I hate the muss and dust which cutting os-artificial makes. I can cut gold much nicer, and it is a great deal more easy for me, so I most always prefer gold. Another very important reason is that the bite upon gold is a nice feeling bite—a natural feeling. If you only protect the teeth from shock in consequence of thermal change, that is the only precaution I take. If I think I can fill my teeth for a year, temporarily, I will do it every time with gold, if the patient will allow it; but if the patient won't have that, I will make a good covering of some non-conducting substance and fill up with amalgam.

Dr. C. E. Latimer: I believe that this indiscriminate separation of teeth, which has been advocated so strongly, has led a great many astray, and one very strong argument in favor of that, in my own mind, is my own experience. When I was fifteen years of age I realized what it was to lose the most valuable tooth in the mouth. On the other side, I realized what disadvantage it was to have a space there, and since I have had the space filled up I have found what a comfort it was to have the Lord's plan followed out in my teeth. I find very many cases where the teeth have been separated so that they may be preserved, yet they are so troublesome to the patients that they have wished, over and over again, that they had had no teeth cut at all. It is true that a tooth standing alone may be preserved. If I want to preserve a tooth I might take out the two adjoining teeth, but what kind of an operation would that be—preserving a single tooth by sacrificing the two adjoining teeth? If we injure or detract from the comfort of the patient, by making these spaces between them, we do them a great injury.

In regard to the restoration with gold, I do not exactly like the plan of talking about a man when he is not here, as I have great respect for Dr. Reynolds; but, between you and me, I would not have that operation performed in my mouth for five hundred dollars. I would not carry about me that tooth in my mouth for any reasonable amount of money. Instead of having that gold crown put on there, I would have an artificial crown, with gold filling, which could not be detected from the adjoining teeth, everybody supposing that it was the natural tooth. All of you do such work as that. I do it, and I rejoice every day that I am able to do that work, and am discarding, more and more, conspicuous gold fillings in the mouth.

The annual election of officers will take place at the next meeting (April).

Subject for next discussion: Incidents of Office Practice.

## THE BORDER-LAND OF INSANITY—WITH EXAMPLES SELECTED FROM AMONG THE ILLUSTRIOUS INSANE.

By EUGENE GRISSOM, M.D., Superintendent of the Insane Asylum of North Carolina, Raleigh.

[From *Virginia Medical Monthly*.]

*Continued.*

The names of Johnson and Swift suggest that of Pope, whose fame will last as long as the *Universal Prayer* remains as it is, one of the most superb expressions of thought in our language. Is it possible that there was anything abnormal in the constitution of Alexander Pope, the friend of wits and statesmen, the keen satirist, and the model of English poetry for two generations? Dr. Johnson says Pope had disease of the stomach and liver, from which came absolute hypochondriasis.

“Feeble at the best, he finally required perpetual female attendance. So great was his sensibility to cold that he wore a fur doublet under a shirt of coarse woven linen. He was placed in a bodice of stiff canvas when he arose, and could hardly hold himself erect until it was laced. Then came a flannel waistcoat. His slender legs required three pairs of stockings, and he could not dress or undress without the help of the maid. Often he was a picture of misery complete—quarreled with his friends; symptoms of pressure on the brain appeared, and he sighed for death to end his physical and mental agony. By the active medical aid of Sir Samuel Garth alone was his mind restored to a healthy tone after these attacks.

“I cannot forbear to note a discovery of very recent date that bears all the marks of an insane act. Prompted by the inordinate vanity that often appears in cerebral disease, he ardently desired to publish his correspondence during his own life-time, and determined to use the petty artifice of concealing the truth by making it appear that the publication was forced upon him through the unprincipled conduct of others, who, he pretended, gave to the public garbled fragments of it. He robbed himself of his own letters, conveyed them piecemeal and by feigned hands to the publishers, and accused others of the theft—among them Dean Swift, who was then imbecile and shut up from the world. Having prepared the literary circle for what he called his genuine correspondence, as published in his own name, he now wrote and gave forth a fictitious one; letters which his correspondents returned at his own request were rewritten, re-dated, and addressed to personages that seemed more likely to bring him credit.”

Pope was a sickly boy, without brother or sister to correct his morbid tendencies; he grew up without healthy control, intensely self-conscious,

petted, spoiled, vain, indelicate, even malignant ; and perhaps the keynote of his life was that this puny skeleton was a parody of the men of the world and of pleasure about him.

But in the survey of the vast field before us, probably no fact will more astonish the casual reader than the constant and recurring proof of brain disease and abnormal organization in a long line of British poets for more than a century and a half just past.

To begin with Gray, the sweet singer, whose music echoes in our hearts. "The curfew tolls the knell of parting day." How rude the shock to know that this child of a father of violent passions and brutal manners, was a prey to feebleness, indolence, trivial derangements of mind and body, with numberless little affectations, absurdly sensitive, disputatious. He changed his home of twenty years (Peter House, at Cambridge) on account of a silly joke of the college boys upon his peculiarities. His life passed in visions of immortal labors that never saw the light.

Darker and sadder was the fate of Collins, his contemporary—a lyric poet of the first rank, whose ode on the *Passions* is to-day in every choice selection wherever English is read. When first published, his works were unread and unappreciated. Receiving a legacy from a rich uncle, he paid voluntarily all the losses of the publisher, and burned the unsold edition. Insanity came on ; he traveled to shake it off in foreign lands, but only to return to the lunatic asylum. Such as it was in that day, how terrible a home for such a spirit ! Pathetic is the account of the scene at Islington. When Dr. Johnson visited him in its dreary wards, he was holding a book in his hand, having given up earthly hopes and fame ; said he, with trembling speech : "I have but one book now, but it is the best." It was the New Testament. He died at thirty-six ; and after he had gone, his odes steadily rose in esteem, until, a hundred years after, they were pronounced the best in our literature. They have been said to partake of the enthusiasm of Tasso, the magic wildness of Shakspeare, the sublimity of Milton, and the pathos of Ossian. Too late, that judgment, for the fevered brain and the broken heart !

Next in time, but greater in importance, is William Cowper, the first of the modern school of poets—the bold genius who threw off the thralldoms of Pope and all the classical school ; and in a single poem, and almost in a day, revolutionized English thought, and prepared the era of Byron, Scott and Wordsworth. The delicate child of a Hertfordshire parson, he was articled as an attorney, but abandoned it. Twelve years he spent in the Temple. Appointed to a clerkship which required a pub-

lic appearance in the House of Lords for one occasion only, he fancies the clerks against him, and was overcome in the struggle to fit himself for its duties. He hopes he will go mad or die, and in going mad attempts to commit suicide. One time he will drown himself, but some one in the way prevents; he has the poison at his lips, but is interrupted; he tries to stab himself, and finally does hang himself, but the garter breaks. For the time the shock restores him. The office abandoned, the excuse of his insanity is religion. He is not one of the elect, and the angry eyes of the Almighty are forever watching him. For two years he is placed under restraint at St. Albans, under care of Dr. Cotton. For a time he loves his cousin, Theodora Cowper, but her father objects. "If you marry William Cowper, what will you do?" "Do, sir," the intrepid girl replied, "wash all day and go out to ride upon the great dog." She spent a life-time faithful to Cowper, in loneliness and solitude; but he, alas! forgot her in the selfishness—the intense self-consciousness of his life. In the words of a great writer:

"Beautiful and amiable as his character was, the capacity of strenuous loving might have been its salvation. A man who is able to throw himself into the existence of another, to seek with vehemence the welfare of another, has the strongest safeguard ever given by God against all the evils that result from brooding over and becoming absorbed in the sufferings of self. In all the combinations of human circumstance, true love is well nigh the only combatant strong enough to overthrow that last and subtlest enemy of man."

He goes to Huntingdon, and boards in the family of Mr. Unwin, after whose death he still remains for many years the close friend and inmate of the widow's house, Mary Unwin, whose patient devotion and unselfish kindness will live as long as Cowper's fame. It is a life of monastic seclusion; hymns and prayers and sermons, with an occasional evening walk, occupy their days and nights, the Rev. John Newton being their neighbor and friend. Cowper renounces all his former friends; the gloom thickens, and the storm bursts suddenly again, while he was one day at the vicarage; although so near his home, with their gardens adjoining, he was there eighteen months before he could be moved to Mrs. Unwin's. He recovers like a child after long illness; builds chairs and bird-cages, and tames his hares. He tries a little drawing and returns, at last, to books. It was then that Mrs. Unwin suggested that he write a poem.

Accepting this thought eagerly, he writes and published *The Progress of Error*, but as his old friends take no notice of it, he quivers with wrath and indignation. Lady Austen tells him the story of John Gilpin's

Ride, at which he laughs all night, and writes his famous verses, so irresistibly comic. When he begs her for another subject, she suggests *The Sofa* with a smile, and straightway he composes *The Task*, hardly dreaming that he would accomplish a revolution in a day. Says a writer:

“England had fancied herself to have outlived the lofty melody of blank verse. She discovered now that the old strain was her favorite—that it could charm her ear, as well as rouse her soul. She found out that nature was as sweet as it had been in the days of Milton—the English fields as fair, the rural sights and sounds as fresh and tender. This worn and sick man, growing old, fanatic, half madman, half recluse, drew the veil from her eyes, and threw open to her a new, sweet, dewy, fragrant world. It is difficult for us to imagine the surprised delight with which the nation felt the sweetness of this voice, which was so familiar, so homelike, so unpretending. Poetry had been for a century a thing of the coffee-houses and the wits. Cowper sprang at a bound into a place more deeply set in the popular heart than Pope ever attained.”

His work well nigh done, the shadows crept up from the autumnal fields. In the last glimmerings of evening light, when Mary Unwin had already felt the warning touch of paralysis, he writes his most perfect productions—strange anomaly of genius. These were the *Tracts*, *My Mother's Picture* and *To Mary*.

In 1794 Mary Unwin falls into dotage, and Cowper, in turn, becomes the nurse. What a solemn picture! One imbecile babbling and laughing in her weakness; the other still and silent as death, speaking to no one, asking nothing, dwelling in a visionary world of diseased fancy. She dies, but in his gathering stupor he knows it not. They take him to a quiet parsonage in Norfolk, where he sits with wild, sad eyes, listening to the moan of the sea. Three years of darkness he survives, writing the *Castaway*, the last and saddest of his poems, in the last year of his life. In the closing year of the century he dies in despair, but, we may trust, to wake in hope.

The lover of his literature is irresistibly attracted by the group of the Lake Poets, as they are called by their friends, whose history is forever associated with peaceful Westmoreland—Wordsworth and Southey, Coleridge, Lloyd and Lamb—dear Charles Lamb.

If one pronounces that the mark of brain disease was upon all of them, the reader is startled and declares that enthusiasm is carrying judgment beyond its bounds. But what are the facts? Three of these married three sisters, and all were engaged in a scheme to found a new Society on the Susquehanna, which should show mankind how to live. In later days, Lloyd became a raving maniac, and escaping from control in England, is arrested in France, and dies in a Parisian Asylum. Coleridge, with

perhaps the grandest metaphysical intellect ever bestowed upon man, and the author of a fragment which no man that ever lived could finish, the wonderful *Ancient Mariner*, after showing signs of the evil to come, finally accelerated his ruin and went to utter wreck with opium. De Quincy, who has written for us the horrors of opium eating, says:

“It was a fine saying of Addison that Babylon in ruins is not so affecting a spectacle, or so solemn, as a human mind overthrown by lunacy. How much more awful, then, and more magnificent a wreck, when a mind so regal as that of Coleridge is overthrown, not so much by a visitation of Providence as by the treachery of his own will, and the conspiracy, as it were, of himself against himself.”

Southey, the poet and historian, died of lingering cerebral disease. Wordsworth, the cool, calm, reflective poet, the last man to have such a thought associated with him, we are told by his sister in mysterious language, was overwhelmed by a nervous attack, at the sight of the French Revolution in Paris, whither he had gone, and his later days were passed in mental oblivion, for he died of softening of the brain.

Charles Lamb, the remaining one of the friends—who does not love the picture of his shambling, ungainly form, but the kindly eye and the generous hand, and the courteous gentleman, and the most delightful essayist that ever handled pen? His was a consecrated life, ever shadowed by the disease that wrought such havoc in his family. Born of a paralytic mother, he was himself confined, in 1796, in an Asylum at Hoxton. Mary Lamb, his devoted sister, killed her own mother by stabbing, in a sudden access of insanity, and from that moment Charles devoted himself to her life-long care. Renouncing his love and all thought of marriage, he determined to live for her. Whenever the seasons of insanity approached, they took their solitary way to the Asylum—she packing her clothes, with the garments of restraint and all. Joyfully receiving the signal of her improvement, he was wont to go back to lead her home again—beautiful lesson of devotion and brotherly love!

George Gordon Byron was the son of a wild *roué*, known as Mad Jack Byron, who lived a life of libertinism. His great-uncle, Wm. Lord Byron, killed his relative, Mr. Chaworth, with the sword, in a fit of passion. Byron's mother was a high-tempered Highland woman, driven half mad by a spendthrift husband. Once an heiress, but ruined in purse and temper and nerves, by turns she fondled and scolded her solitary, weak, club-footed and epileptic boy. At eleven he becomes Lord Byron, and from the deepest poverty they pass to the elegance of Newstead Abbey. For fear of the termagant mother his guardian stands aloof, and the unhappy boy enters life without discipline, with no one to re-

spect, and no one that he loves. A trifling book of juvenile poems is harshly criticised, and he springs to the arena, the Minerva of his genius full born, with a quiver of poisoned arrows. The whole earth shook with the onset, and fame was made. He has no friends; he takes his seat in the House of Lords a stranger. With disappointment in his soul he flies to the East. When he returns, *Childe Harold* has made him the lion of London, and he finds himself, says Moore, "among its illustrious crowds, the most distinguished object."

In the mean time he lost his mother. She, poor thing, although she could not agree with him, really loved him, and believed in his genius. And he—the moment the funeral procession leaves the door, when all but they two of that household had gone to the grave for the last solemn rites over the ashes of his mother—goes to work with his boxing gloves and has a violent sparring-match with his servant. It was a wild, physical outburst of dumb misery and defiance—that defiance of pain and of better emotions that distinguished his whole life.

We need not recount the miserable story of his marriage and separation, nor the recital of his dark vices; nor have we time to comment upon the kindly acts his better soul would command, as related by Countess Guiccioli. His long line of brilliant poems the world knows by heart. Unhappily the memoirs were destroyed, which would have revealed to the world more fully the nature of the vulture that preyed upon his life. From time to time recurrent attacks of his epilepsy appeared—the last happening in the Spring of 1822, when in Greece, upon his expedition to aid the patriots in recovering their freedom. Riding out in bad weather, before he recovered from the prolonged prostration of his last dreadful seizure, he succumbed and died after a brief illness. The epitaph has been pronounced upon him: "Never was life less happy nor more forlorn, nor an end more pitiful. Thus all was ended upon earth of a man who had received every gift which heaven could bestow, except the control of the glorious faculties that God had placed in his hands."

What a contrast is he to Walter Scott, who, when he is involved deeply in debt by his kindness to others, rallies his brain to labor, and in less than three years alone, by the work of his pen, pays a hundred and forty thousand dollars of the sum. He cries out, "Oh, invention, rouse thyself—may man be kind, may God be propitious." "The worst is," he sadly adds, "I never quite know when I am right or wrong." He bears up under two strokes of paralysis. Still, like galley-slave, he labors—confusion of thoughts by day, unalterable weariness and pain by night. When friends tell him his last book (*Count Robert*) is a failure, he only

says, pitifully : " God knows I am at sea and in the dark, and the vessel leaking too, I think. I have suffered terribly, and I often wish I could lie down and sleep without waking. But I will fight it out if I can. Did I know how to begin, I would begin again this very day, though I knew I should sink at the end." . He struggled until the light went out. His wife died by his side when he most needed help. With one faithful child by him, he toiled on. He makes a journey of despair to Italy and returns to meet his doom. The greatest works of his genius, it well has been pronounced, pale before the work of his life. Scotland holds him the type of her race, the flower of her genius, the noblest, truest and most gifted of all the Scots who glory in the name.

The poet, Shelly, some compassionate hand has described as " a wild and wayward figure, like the Faun of the imagination, or those strange and beautiful beings dwelling between earth and heaven, on the heights of Gothic fancy." He was a spirit of the intermediary world—a wandering genii—nothing more. Before twenty years of his young life had gone by, he had cut himself off from his family and ruined his career. He was a spirit of the race of Ariel. At Eaton, aged fifteen, his one idea is resistance to God, to man, to laws, to authority, to whatever opposed him. This, indeed, is the central idea of his great poem, *Prometheus*. He leaves his classes to study electricity under a Dr. Lind, when he and his preceptor indulge in bouts of blasphemy, striving each to curse the heavier, the one his father, the other the King: often at midnight he sallies forth, in hope to call up the evil spirit.

At Oxford, see him a slim lad with unnaturally brilliant eyes, stooping shoulders and strange voice like a peacock's cry ; he lives amid his crucibles, feeds upon bread almost entirely, which he tears from the loaf as he walks, lingers for hours to throw stones in ponds, or sailing paper boats. That was his passion all his life, and he has been known to use a fifty pound note, when no other paper was near. Engaged in zealous debate, he would suddenly stop, fall like a cat on a rug, and sleep for hours, with his little round head exposed to the fiercest heat. He imagines, and tells everybody, when he was expelled, that it was for publishing a book of infidelity, a pure delusion, for he had only read it. The sentence really was for his scurrilous letters to eminent men who were strangers to him. His sisters sent him money by Harriet Westbrook, their schoolfellow. She hates the tyranny of school, and he marries her in his sympathy—one sixteen, and the other not nineteen—to go roaming through England, Scotland and Wales. Finally they drift to Ireland—and for what ? To issue pamphlets and speak for Catholic

Emancipation. Returning to Wales, he imagines some one has fired at him and put a hole through his gown. He utters a breathless cry to his friends for breathing time and twenty pounds. They pay it and smile, but he declares all the after fluctuations of his health were due to that shock. In this year, 1813, *Queen Mab* was written. This, the most celebrated of his works, is to investigate what he called the horrors of Religion, the falsehood of Revelation, and the cruel fiction of Christianity.

Next year he falls in love with Mary Godwin, and reveals it in a strange scene within St. Pancras' churchyard, by the grave of her own mother. He told her if supported by her love, he would enrol his name among the wise and good. He abandons his wife at the cottage in Brockwell, his child, the baby Ianthe, and his unborn babe, to fly to the continent with Mary, never to see wife and children again. Yet he speaks in quiet friendliness of this abandoned wife, this desolate mother not yet twenty, and proposes to a lawyer that Harriet be invited to join his new household in the capacity of humble friend to himself and Mary, and can hardly be brought to see the impossibility of such a proposal. Despite his sweet amiability, the betrayed wife bore her sorrows two years and then drowned herself.

Now he marries Mary, and going to Switzerland, where they meet Byron, a dark episode in their lives ensues, upon which the pen refuses to touch—let it be buried in night! He rages against English law, because, now that he is rich, the custody of the children is denied to him who murdered their mother—children whose home he has passed many a time, and never once turned to look upon—the unnatural father. Driven by a delusion that the child of Mary will be taken from them by the law, he hastens to Italy. There that hateful poem is given to the world, *Beatrice Cenci*. Strange anomaly, that the brain which conceived that hideous dream should have produced the *Sky-lark*! He wanders from Pisa to Rome, from Venice to Naples, making romances to himself of love-lorn ladies following him afar off. His thirtieth year was now completed when his frail pleasure yacht went down in the Bay of Spezzia, and his washed-up corpse was burned by his friends with a theatrical show of incremation. Poor wandering voice, absolutely dead to the distinctions of right and wrong, to true love for kindred, or reverence for God! Yet his admirers, the Swinburnes and Rossettis of to-day, call him "the greatest English poet since Milton, and the greatest Englishman of his time." Who can doubt that, but for accident, the torch of life would have burned out with the glare of madness?

I feel that this sad catalogue should come to a close, and will but briefly say that among the great number whose names belong here, are the melancholy poets, Pollok and Young ; Harrington, the author of the famous *Oceana*, whose madness was extreme ; Simon Browne, the celebrated divine, whose delusion was that his soul was annihilated ; Robert Boyle, the philosopher, who could barely refrain from suicide ; Metastasio, the father of Italian opera ; and Robert Hall, of whom Prof. Sedgwick declares, "For moral grandeur, for Christian truth and sublimity, we may doubt whether his sermons have their match in the sacred oratory of any age or country." Observe that Robert Hall read *Butler's Analogy* and Edwards on the *Will* at nine years of age ; wrote religious essays at ten ; became a Baptist minister at sixteen ; and, laboring at mental work twelve hours a day, soon was conveyed to the ward of an asylum. Upon recovery and rash excess in work again, he was sent once more to its friendly walls. The great critic, Dugald Stewart, endorsed by the Reviews, affirms: "Whoever wishes to see the English language in perfection, must read the writings of Robert Hall."

Who that heard it forgets the thrill through Christendom when the world knew that Hugh Miller had taken his own life ? By constitution superstitious and morbidly suspicious, the child of a seafaring man lost in a storm, his mother filled the boy's mind with weird Celtic tales, the ferment of superstitious fears. Battling in after days between skepticism and truth, he cuts himself fearful back strokes ; all his life a terrific intensity of mental vision characterized him, and the victim of misunderstandings among friends, and the chimeras of his fancy, he died at his table by his own hand, in a dark hour when reason had left her throne.

Paganini, the violinist, whose execution has never been equaled by mortal man, was a being with an intensely susceptible nervous system, often deprived of the powers of speech, with a pale, bony face, frequently of livid green : at times, it was said, he seemed to be out of the body. His contradictions he could not himself explain—dashing from city to city with utmost speed, with all the windows of the carriage closed even in the hottest weather ; he entered no inn, nor spoke when he was addressed. Arrived at his hotel, he removed his clothes, and threw open doors and windows for what he called his air bath. He lay on the sofa, passed days without eating, drank his chamomile tea and sat in perfect darkness at night until his hour for sleep. Sixty people have been waiting to see him, but he took no notice of knocks, and sat, lost in trance. No wonder the mob believed him a murderer whom the evil spirit had taught to play upon one string with such wonderful music, when a convict in

the condemned cell. After astonishing a world, he gave his dying moments to the feeble notes of his violin in the moonlight by the blue Mediterranean, with the breeze waving softly in the trees, as he expired broken-hearted—his spell was over. Dying without the sacraments, his body was refused Christian burial, and it lay above ground five years, until the vulgar stories of ghostly violins playing about the coffin impelled the son to pay large sums of money to obtain the privilege at last to bury his father in the village near his home, where his ashes were finally laid to rest in May, 1845.

We will turn aside to read some passages from the career of Junius Brutus Booth, the most eminent actor that America ever produced. From his memoirs, as penned by his own daughter, we learn that he had undoubted periods of madness. To use her language:

“The calamity seemed to increase in strength and frequency with maturer years, and sometimes assumed very singular phases. From childhood, we learned from our mother, the devoted and unwearied nurse of him who endured these periodical tortures of mind, to regard these seasons of abstraction with sad and reverent forbearance.”

So completely did he merge his own identity into that of the character he assumed, that most of his fellow actors dreaded to face him as Richmond on the stage, in the last struggle of Richard, lest he should really take their lives; for frequently he had to be reminded that he was personating a character, and must allow himself to be slain.

His salvation from utter wreck, for many years, was his love of the soil, the happy retirement to the work of his garden in the open air, away from the feverish excitement of the theatre.

On one occasion, while on a journey South, he spoke of the actor, Conway, who had committed suicide by leaping into the sea. As the vessel neared the spot, Booth cried out that he had a message for Conway, and jumped into the ocean; but a boat was lowered at once, and he was saved. Yet the suicidal impulse was so quickly over, that he called out, when once safe in the boat, “I say, Tom, you are a heavy man—be steady. If the boat upsets, we are all drowned.”

It is well known that in Charleston, after he had played Iago one night, and returned to their room, with his friend Flynn, who had been the Othello of the evening, that he attacked him fiercely with his drawn sword, crying:

“Nothing can or shall satisfy my soul,  
Till I am even with him—life for life.”

Flynn, to save his life, grappled the fire-poker, and struck Booth in the face, breaking his nose. On another occasion, he came near sacrificing the life of the actor Eaton, in the same play.

He was supposed by turns a Jew, for he knew Hebrew, revered the Talmud, and attended the Synagogue, joining the worship in the Hebraic tongue. He was familiar with the Koran; and again he was a devout Catholic. It is related that, while a Catholic, he once walked from his house, in Hartford county, Maryland, to Washington, with leaden inner soles to his shoes, by way of penance for some sin.

Few of his eccentricities were more remarkable than his desire to leave the stage at \$300 a night when thousands hung upon his lips, and money and fame were his everywhere, for the post of lighthouse keeper at Cape Hatteras, for \$300 a year. We learn that this memorandum exists, in his handwriting:

"Spoke to Mr. Blount, Collector of Customs, about Cape Hatteras lighthouse. He offered it to me, with the dwelling house and twenty acres of land, and salary of \$300 per annum, for keeping the light—Government providing the oil and cotton; a quart per diem. Grapes, melons, cabbages, carrots and onions grow there; rainwater the only drink, a cistern on the premises for that purpose. Abundance of fish and wild fowl; pigs, cows and horses find good pasture. Soil too light for wheat or corn. The office is for life, and only taken away through misbehavior. Light requires trimming every night at 12 o'clock; no taxes, firewood from the wrecks. Strawberries, currants and apple trees should be taken there; also a plow, spades, and a chest of carpenter's tools. Pine tables the best. Mr. Blount is to write me word if the office can be given me, in April next, from his seat in Washington, N. C."

It is needless to say that theatrical managers broke up the plan at headquarters.

Booth permitted no animals to be killed on his place, ate no animal food, nor allowed it in his house, for many years. It is said when a grave and respectable Quaker once pressed dish after dish of meats upon him at supper, on a steamboat, and finally offered something for which Booth had a special abhorrence, he fixed his deep eyes on the Quaker, and said with profound earnestness, "Friend! I only indulge in one kind of flesh—human flesh!—that I take raw!"

Once, in Boston, after a long scriptural argument against the use of animal food, and the reading of the *Ancient Mariner* to the Rev. Mr. Clarke, he exhibited a bushel of wild pigeons on a sheet, which he asked to have buried in the cemetery, to testify in a public way against man's barbarity. Upon refusal, a day or two after, he actually placed them in a coffin and conveyed them to a lot he had purchased in another cemetery, with all the solemnities of a funeral. Yet he was acting every night in his usual marvelous style. Finally, the actors everywhere grew afraid of him. Terribly in earnest on the stage, when he passed off he

sat behind the scenes, looking sternly at the ground and speaking to no one.

He would often disappear when in no manner intoxicated, but his family avoided questioning, and respected the sanctity of his struggles and his seasons of darkness. With him certain colors and metals were sacred for certain days. Strange as it seems to some, this world-renowned actor was a good man, humble and devout before his Maker, and his last words were *Pray ! Pray ! Pray !*

All these illustrious victims of disease, save the last, are those of children of the old world. There are reasons why it may not become me to dwell upon the infirmities of our countrymen, from James Otis, the revolutionary patriot, to Horace Greeley, the late candidate for the highest position in the gift of the American people.

Reviewing this mighty mass of human misery, we see everywhere a degenerate ancestry, or gross physical habits, or overwhelming labors thrown upon a young and tender brain. Some fall at the first onset ; others bravely resist, and manage to secure all that life can give. Yet again and again we have seen the immortal mind rising above the trammels of the body to assert its kinship with Divinity.

The lesson is one of the greatest of the hour to us as a people. The late war has not left us all its legacies—the next generation will bear its cruel stamp. Excess in all its forms is a national sin : in eating and drinking, in gambling and extravagance, in the rush of social emulation, and the mad excitements of wealth and ambition. Men are dropping around us every day, with paralysis and apoplexy. Hundreds are yearly added to the rolls of the insane, whose families are ruined, their wives broken-hearted, their children thrown as waifs on the tossing sea of destiny.

Let us take comfort that science can do so much to heal the wounds of the brain, and break down the barriers between the mind and body. The venerable Dr. Chipley utters these words of consolation and of hope :

“ There is, in fact, a power in man to prevent or control insanity, and it fails chiefly when it has been misdirected in the earlier periods of life. This power is rarely efficient unless it has been developed and strengthened by education ; and hence the poor and unschooled are the greatest sufferers from the most terrible of all human afflictions. For example, the educated and the uninstructed are alike the subjects of illusions ; but the trained mind of one will recognize their true character, and adopt suitable measures to correct the morbid condition on which they depend ; while the other, unable to reason, will accept them as real. The illusion may be precisely the same, yet the one subject is sane, and the other insane. The difference is in the organ of self-control. Vagaries

intrude themselves upon all minds, but the man of self-control represses them and seeks fresh impressions from without—the weak man yields to them, and is lost.”

Let our children be brought up in sound and healthful habits of mind and body. Let us rein in the passions that would enslave us. Let us not flee the wretched lunatic as one accursed of God, the object of curiosity or of horror; but rather enfold him in the arms of a charity and a sweet compassion, whose great Exemplar did not disdain to “heal the sick.”

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## HEMORRHAGE AFTER EXTRACTION.

By C. R. PECK.

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In an article which appeared in the October number of the DENTAL MISCELLANY, from the pen of Dr. J. Ottley Atkinson, the writer says in regard to hemorrhage from the alveolus after extraction: “Suffice it to say, that in all ordinary cases *pressure* must ever be regarded as *the* remedy.” I beg to differ with the doctor; and I am of the opinion that if he will try my remedy he will find it far more efficacious and decidedly pleasanter to his patients. I, as I presume almost every dentist has, have met with some very obstinate cases of hemorrhage resulting from extraction, and the easier it is arrested, the more pleased are all parties interested.

Matico leaves (*Artanthe Elongata*), as a local remedy in case of excessive hemorrhage after extraction, may not be new to many of the profession, but in my intercourse with dentists I have met none who make use of this most invaluable remedy as a styptic. Neither have I ever seen it mentioned in any dental writings. I can perhaps give no better description of its use or manner of application, than to give a few of the many cases that have come under my care.

On the morning of the 24th of August, 1875, a lady called at my office, was etherized, and I extracted nine teeth and roots. At eight o'clock in the evening I was sent for to see if I could arrest the hemorrhage. I found the patient in bed, so weak from loss of blood that she could not raise her head from the pillow without fainting. The hemorrhage had not ceased a moment since the extraction, notwithstanding the efforts of an M.D., with Munsell's solution and pressure for two or three hours. Clearing the mouth as well as possible of all coagula, I found the hemorrhage to proceed entirely from the socket of the right superior cuspid.

I inserted a cotton plug, then broke up the matico into a coarse powder, and pressed it into the form of a cone. Then, withdrawing the cotton plug quickly, inserted the cone of matico, and pressed it in with an ordinary amalgam plugger. The bleeding ceased entirely in five minutes.

On the first Tuesday in October following I was called up in the morning, the messenger saying "a man at the hotel is bleeding to death from a tooth." I found this patient very weak, excited and frightened. The tooth had been extracted the Saturday previous in Philadelphia, and no trouble had resulted up to the hour of retiring on Tuesday night, at which time the hemorrhage set in. Here was a case more difficult to manage, it being the right superior wisdom tooth. I thoroughly cleaned the mouth and syringed out the socket. I moistened the powdered matico a little and wrapped a few fibres of cotton around the cone, to keep it together, and make it easier to handle, withdrew the temporary plug of cotton previously inserted, and quickly pressed the matico into the socket. The hemorrhage ceased immediately.

I might multiply cases, but I can sum them all up in these words: "In every case matico has proved a speedy success."

There is no astringent properties in matico—its action seems to be entirely mechanical. It possesses the power of coagulation, and this, together with the slight expansion of the dry matico from the absorption of moisture, forms a perfect plug in the socket, which may be left to take care of itself.

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## RESETTING A TOOTH.

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Miss B., aged 20, called on me, with an aching first superior bicuspid, on the left side. From examination I found it to be a dead tooth, and had been treated as such by a dentist of a neighboring town. My first effort was to reduce the inflammation by blistering the inflamed gum: then tried blood-letting, but all was of *no avail*.

She returned on October 1st, 1876, with the gum very much swollen, and had suffered very much. I told her the only thing left was to extract the tooth, when she asked me if it could not be put back. I told her I would do all I could for her, as she seemed very anxious to save the tooth. Extracted the tooth with as much care as possible. The condition of fang was very bad, having a nerve *broach* broken off, and protruding *apex* quarter of an inch. On the posterior side of fang, and about half its length, it had been drilled through, and the gold was forced

through into the *periosteum*. I removed abscess from fang, and filed off a portion of same (first removing branch), cleaned with a solution of carbolic acid, glycerine and oil of cloves, equal parts, washed out socket with warm water, and wiped out all remaining disease with solution used on the fang. I then filled tooth with silver, as it was *very frail*. By this time the *blood* had entirely stopped from socket. I put tooth in warm water about the same temperature of mouth, and carried to socket, instructing the patient to close her teeth, which carried it home. I retained it in place with a rubber splint made from the *red-base* plate, which she wore *ten days*, using as a *mouth wash* a preparation of "*carbolic mouth wash*." Removed splint on her return, found tooth doing very well, and it has now been over five months, and the tooth is as *solid* in its socket as any other tooth in her mouth. The case is a great success, and I *hope* the profession will give this branch more thought, and we will see many cases where teeth have been made useful *by resetting*.

FRANK L. HARRIS, D.D.S.

*Harrisburg, Va., Feb. 23, 1877.*

## INAUGURAL ADDRESS OF DR. JOHN W. DRAPER,

As President of the American Chemical Society. Delivered in Chickering Hall, New York, November 16, 1876.

GENTLEMEN, MEMBERS AND ASSOCIATES OF THE AMERICAN CHEMICAL SOCIETY: In accordance with the plan of the American Chemical Society, I am called upon to address you this evening. I have to congratulate you on its successful establishment, and its prospect of permanent success.

Let us consider some of the reasons which would lead us to expect that success, not only for our own, but also for other kindred societies. The field of nature is ever widening before us, the harvest is becoming more abundant and tempting, the reapers are more numerous. Each year the produce that is garnered exceeds that of the preceding. In all directions there is good hope for the future. Perhaps, then, you will listen without impatience for a few minutes this evening to one of the laborers who has taken part in the toil of the generation now finishing its work, who looks back not without a sentiment of pride on what that generation has done, who points out to you the duties and rewards that are awaiting you, and welcomes you to your task. Let us look at the prospect before us.

The progress of science among us very largely depends on two elements: First, on our educational establishments. Second, on our scientific societies. To each of these I propose to direct your attention. And, first, of our colleges:

Prof. Silliman, in his address, delivered on the occasion of the Centennial of Chemistry, at the grave of Priestley, in commemoration of the discovery of oxygen, makes this remark: "The year 1845 marks the beginning of a new era in the scientific life of America, which is still in active progress, and chemistry has had its full share in this advance." He then enumerates the causes which, in his opinion, had brought about this increased activity. Among them are the Centennial celebration of the American Philosophical Society in Philadelphia in 1843; the reorganization of the United States Coast Survey in 1845; the establishment of the Smithsonian Institution at Washington in 1846; the enlargement of *The American Journal of Science* in the same year; the contemporaneous foundation of the Astronomical Observatory at Cincinnati; the institution of the Analytical Laboratory at Yale College in 1847, and simultaneously the Lawrence Scientific School at Harvard. To these he adds especially the establishment of the American Association for the Advancement of Science in 1848. Coinciding with him fully as to the character and power of these and other local causes which he mentions, I cannot but regard them as being themselves the issues of influences of a much more general kind.

A revolution had been taking place in Europe—a revolution not so much political as industrial and social, though it was followed by political consequences of the most important nature. Its commencements may be seen in the preceding century in the canal engineering of Brindley; in the improvements of iron manufacture; in the construction of all kinds of machinery, which reached its acme when the hand of man was deposed from its office, and through the slide-rest and planing machine engines were made by themselves. Then came the exquisite contrivances for the manufacture of textile fabrics, so that a man could do as much work in a day as he had formerly done in a year, the movement in that direction culminating in the two steam engines, the condenser and non-condenser. The demand for cotton rose; the value of the slave, its cultivator, was enhanced; and the negro question became the paramount political question in the United States. See how scientific discoveries and inventions lead to political results! Herein, among other great events, we find the origin of the American civil war.

In Europe, the social effect of the use of steam was strikingly mark-

ed. Performing mechanical drudgery, it relieved vast numbers of the laboring class, and gave them time to think. It concentrated them in factories and mills. Those industrial hives were pervaded by literary influences, perhaps not always of a kind that we should approve of. They became the seats of agitation in politics and theology, and while this was the effect on the laboring mass, the owners or capitalists were accumulating enormous fortunes.

We may excuse the enthusiastic literature of the cotton manufacture its boasting, for men had accomplished works that were nearly godlike. Mr. Baines, writing in 1833, states that "the length of cotton yarn spun in one year was nearly five thousand million of miles—sufficient to pass round the earth's circumference more than two hundred thousand times, sufficient to reach fifty-one times from the earth to the sun. It would encircle the earth's orbit eight and a half times. The wrought fabrics of cotton exported in one year would form a girdle for the globe, passing eleven times round the equator, and more than sufficient to form a continuous sheet from the earth to the moon." And let us not forget that to give commercial value to this vast result the capital chemical discovery of bleaching by chlorine was essential. Such was the condition of things in England just previously to the epoch in question. Necessarily it was followed by great social results.

But there was something more. The locomotive absolutely revolutionized society. A man could now travel further in an hour than he had previously done in a day. Again it was clear that important political results were occurring. The effect of the railroad was to render nations more homogeneous, to destroy provincialism. It is actually true that language underwent a change. No one who had remarked the various dialects of the English counties prior to the opening of the Liverpool and Manchester Railway, and the homogeneousness of speech which is fast displacing them, could be blind to this. Simultaneously a redistribution of the population took place. It was largely withdrawn from the open country, and concentrated in the towns.

In this statement I am recalling facts so common that they are familiar to us all. We all appreciate the immense social changes that took place just before 1845. Who in those times could fail to perceive that grand consequences must follow the expenditure of thousands of millions of dollars in the building of railroads—who, when he saw the labor of a year shrinking into the compass of a day, the travel of a day into the compass of an hour, the thought of man outstripping the velocity of light—who could be so obtuse as not to discern that a new agency had taken pos-

session of the earth, that it was agitating the nations to their very foundations, that it was ameliorating the lot of man, increasing his power, and dealing remorselessly with old ideas, the fictions and fallacies of the past!

Can we wonder, then, that those who were growing up in the midst of these marvels should not only contrast the activity by which they were surrounded with the stagnation of preceding centuries, but should demand to be made acquainted with the power that was thus opening a new world before their eyes. Very soon it became apparent that there was no provision in the existing educational establishments, the universities and colleges, for this unexpected state of things. These were, to be sure, good enough to initiate a bench of boys into the method of translating an ode of Horace or a few lines of Sophocles, but something more substantial than that was wanted now.

This was the true cause of that influence which began to be felt in America about 1840. Every reflecting person saw that a change in public education was imperative—nay, more, was impending. Confronted by the vigor of modern ideas, the system that had come down from the dark ages was seen to have become obsolete.

In addition to these influences, there was another, at which we must for a moment glance. Let me, in a few words, sketch its history.

The peninsula of Italy was separated from the rule of the Greek emperors, in the eighth century, mainly in consequence of the iconoclastic dispute. Partly through the stress of circumstances, and partly as a matter of policy, the Latin language was brought into such prominence that it was supposed to contain all the useful knowledge in the world. In Western Europe, at the close of the fourteenth century, Greek was totally forgotten.

But when it became clear that Constantinople would be taken by the Turks, many learned men fled to the West, bringing with their language precious classical manuscripts. As it was feared, however, by the dominant authority, that knowledge and opinions of an unsuitable kind might thus be introduced, Greek obtained a foothold with much difficulty, and it was only by the aid of Florence, Venice, and other commercial towns of Upper Italy, that after a struggle it made good its ground. The Latin had now a successful rival.

A century later brings us to the culmination of the Reformation. Its literary issue was an admiration of the language of that much enduring, that immortal race to whom the Old Testament is so largely due. As had been the case with Greek, so now Hebrew passed from a condition

of neglect to one of extravagant exaltation. It was believed to have been the original language of the human race, a conviction that proved to be a great stumbling-block to the progress of learning. There were thus three classical languages, each having its own paramount claim.

In 1784 the Royal Asiatic Society was instituted in Bengal. One of its earliest and most important services was that it brought the Sanskrit language emphatically to the knowledge of Europe. The similarity of this to Latin and Greek, especially in the grammatical forms, struck every one with surprise. At first the old literary party resisted its claims, some of them even affirming that it never had been a spoken tongue, but that it had been fictitiously constructed out of Latin and Greek. The creation of comparative grammar by the great German scholar Bopp, in 1816, threw a flood of light on the subject, and the discovery in 1828 by Hodgson, of the Buddhistic sacred writings in Nepaul, revealed to astonished Europe a literature of grand antiquity and prodigious extent, in which is contained the religious belief of 400,000,000 of men—ten times the present population of the United States. Greek and Latin had now to descend from the imperial thrones on which they had been seated, and take their places as later and less perfect forms of this wonderful Oriental tongue.

In the higher regions of literature all over Europe these discoveries made a profound impression. It was at once seen by the great scholars of the times that the existing educational system, founded as it so largely was on the languages of the Mediterranean peninsulas, was altogether on an imperfect basis. They saw that philology was about to occupy a higher platform, and that, though it might cost a struggle with present interests, a change in public education was necessary. But though these languages have suffered an eclipse, there still remains that priceless heritage which they have transmitted to us—immortal examples in national life, in patriotism, in statesmanship, in jurisprudence, in philosophy, in poetry. Still there remain the ruins of the Parthenon, the relics of statues which have no rival elsewhere in the world—embodiments of the beautiful, before which, even at the risk of being denounced as a pagan, a man might fall down and worship. Still there remains the history of that awful empire which once bore sway around the Mediterranean Sea, an empire to which we owe our civilization, our religious convictions, and even our modes of thought.

I add this great discovery in letters to the scientific and industrial movement I have described as bringing on the epoch of 1840.

Educational institutions are in their nature very much under the in-

fluence of the past. They are guided by men of the parting generation, and are essentially conservative. The changes they began to manifest did not originate within them, but were forced upon them without. They clung to the mediæval as long as they could, and only accepted the modern when they were compelled.

Among American colleges which are emancipating themselves from the mediæval we may number Columbia, Cornell, Harvard, Princeton, Yale, the Universities of Pennsylvania and Virginia. Doubtless there are many others that would follow the example, if they could, but they are fettered with the gyves of sectarian or local restraint. They march along, daintily and grotesquely, in the pointed shoes of the fourteenth century.

I linger on this subject of colleges because the example of other countries, and especially of Germany, proves to us that on them our hopes for the development of science must very largely rest. The scientific glory of Germany, not inferior in brilliancy to its military glory, is the creation of its university professors. Among them we find the great chemists and physicists, whose works we study with delight.

Our colleges must separate themselves from the mediæval, and assume thoroughly and sincerely the modern cast. Sincerely, I say, for not a few of them indulge in deception. They would have us believe that they teach physics when they have no modern apparatus; chemistry when they have no laboratory; botany without any garden, herbarium, or even drawings; geology, mineralogy, natural history, without any cabinets. So ignorant are some boards of trustees and faculties, that they hold such equipments as luxuries easily dispensed with. I have known some go so far as to affirm that as much money ought to be expended in teaching a few boys Latin and Greek as in giving a demonstrative and illustrated course of science, and even to act on that principle. In institutions under this kind of influence you will always find that their whole weight is thrown towards the æsthetic. Whatever college honors there may be, whatever emoluments, pass in that direction; and though, through fear of public opinion, science cannot be ignored, it is simply tolerated, not cultivated.

From our colleges we may, in the second place, turn to our scientific societies.

I have referred to the period at which the Greek language became cultivated in Western Europe. The first societies were those established in Florence by its admirers. In the Medicean gardens the lovers of Plato assembled to restore, under an Italian sky, the philosophy that had been extinguished in Athens, and to commemorate by a symposium the birth-

day of that illustrious man. There is a pleasure in associating with those whose thoughts are congenial to our own, in breathing an atmosphere in which the intellectual makes itself felt.

Very soon the example was imitated. Persons who had a love for science followed the example of those who had a love for letters. The *Academia Secretorum Naturæ* was instituted at Naples, in 1560, by Baptista Porta, the inventor of the camera, which photographers now so much use ; the *Lynecean Academy* for the Promotion of Natural Philosophy, in 1603 ; the *Royal Society of London*, 1645 ; the *Royal Academy of Science in Paris*, 1666 ; the *Berlin Academy of Arts and Sciences*, in 1700. Leibnitz, the rival of Newton, was its first President.

When the *Royal Society of London* was founded, it encountered a bitter opposition. Had it not been for the "Merry Monarch," Charles II., it must have succumbed beneath the fierce maledictions launched against it.

As in Italy, when the opportunity was offered, men of the same inclination of thinking sought each other, so here, to the surprise of the most enthusiastic chemists, when such an association was proposed, persons seeking membership came crowding in. The society I have the honor of addressing this evening was the result. Already it has completely organized itself ; already it has published the first number of its "Proceedings," a publication which I am sure will procure for it approval and respect.

In these organizations of scientific effort, an opportunity of assisting is given to those who, not having dedicated themselves to philosophical pursuits, have yet achieved success in other walks of life, and who, recognizing that the progress of civilization very largely depends on the increase of knowledge, may desire to aid in promoting that great result by the application of their means. See what immense benefits have arisen from the money grants that foreign governments have placed at the disposal of their scientific bodies ; see what a stimulus there has been in the award of medals of honor, and, if you desire to witness the effect of a well-judged benefaction, look at the *Smithsonian Institution*. I would not say one word in disparagement of gifts to colleges and universities, for it is indeed a noble purpose ; but endowments for the promotion of a knowledge of nature, conferred on scientific societies for the good of all men, no matter what their country or color, no matter what their religious profession or political condition, are still nobler. The one is a local and transitory benefaction, the other an enduring and universal benevolence.

In our own special science, chemistry, all that has been done has only

served to extend the boundary of what remains. The thousands of analyses that have been made have brought us into a wilderness of results. We have not been able to rise to a point of view sufficiently high to discover what is the true place of those results in nature. We try to represent on the pages of our books and on our blackboards, formulas of the constitution of things, conscious all the time that these are at the best only convenient fictions, which must necessarily change as we gain a more perfect insight into that grandest of all problems, the distribution of Force in Space, and the variations to which it is liable. The geometry of chemistry is that of three dimensions, not of two. We have to consider the relation of points not situated on one plane, and hence it is necessary to employ three axes of reference; nay, even more, we cannot avoid the conception of the mathematical method of quaternions. Our inadequate information respecting the real grouping of atoms is followed, as a necessary consequence, by imperfection in our methods of nomenclature—the confusion in this respect becoming, as we all too well know, every day worse and worse.

*(To be continued.)*

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## A NEW CAUTION—ITS APPLICATION TO SENSITIVE DENTINE.

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Read before the Odontographic Society of Pennsylvania, April 4, 1877, by THOMAS C. STELLWAGEN, M.D., D.D.S., Professor of Operative Dentistry and Dental Pathology in the Philadelphia Dental College.

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It has been for many years an aim of the true dentist to be able to so obtund the sensibility of the dentine, as to enable him to decrease or entirely overcome the pain inflicted by his operations upon the teeth. In this field practitioners of the present day are rather more nonplused by the multitude than assisted by the effectiveness of the agencies employed. It has been very truly said that numbers of remedies for any disease, indicate rather the inefficiency of their action, inasmuch as their multiplication shows the general necessity for attempting the cure by other means, thus constantly bringing additions to the list of those already found ineffectual.

This knowledge causes me to advance with caution, the idea of a new remedy; but the hope that it may afford relief, has overcome all hesitation, particularly since I have so frequently found it of service in my own practice. Several conditions have long been proved useful in the mitigation of the pain of excavating sensitive dentine. Among such we find antacids of various kinds, from chalk or lime-water, lead us on to caustic

potassa, which latter will answer at the same time two of the requirements; for, devitalization of tissue will admit of the cutting without producing sensation; of late it has been advised, that in proportion as we can effect the desiccation of the parts, we can approach nearer to a complete relief.

So universally, however, has devitalization of the dentine been resorted to, that cauterizing by the red or white hot iron, or the platinum wire heated by the galvanic current, is believed to present the surest and most satisfactory means for the purpose; but this latter was only reached after vainly testing the long series of potential cauterants to which all our remedies seem to point, and which are recommended, more or less, as they are rendered more or less manageable. The objection to the ant-acids is that, while to a degree useful, they often require much time for the completion of their effect, and this makes their use uncertain, from the difficulty of keeping them from dilution by the saliva and fluids in the mouth. Simple drying of the cavity, has likewise many points of advantage; but the embarrassment has been that the pain inflicted from the application to the whole, or a large portion of the surface, is frequently severe; and to keep up such an absolutely dry condition requires a constant use of the hot-air syringe, or warmed instruments, rendering the process too tedious, also adding the danger of impairing the temper and thereby the edge, of the cutting instruments.

The potential cauterants generally require the most delicate manipulation, so as to affect only a small portion of the surface at one time and prevent their dilution by the moisture extracted from the dentine, which both impairs their activity and renders them to a degree liable to escape from bounds, and burn where not desired.

Finally, the actual cautery in the teeth, from the impossibility of keeping it white hot, had been abandoned, until quite recently the expensive and cumbersome process of the galvanic battery current, transmitted through a fine platinum wire, was resorted to; although very much limited in its application by the difficulties and expense attendant upon its preparation, as well as the time consumed in changing points, so as to reach comparatively inaccessible parts of the teeth.

On the 13th of March, while attempting to remove carious dentine from a very sensitive tooth, I determined to try the hot wood ash and fresh charcoal from a burned match. Finding this gave considerable relief, I concluded to supplement it by the actual cautery from the coal of fire upon the point of the stick. My patient and friend, J. S. Walker, M.D., of Philadelphia, suggested that a harder wood might make the coal more firmly attached. I at once ignited the end of a piece of dental

pivot wood, with which I found my experiments greatly facilitated, and had the satisfaction of so completely obtunding the sensibility of the dentine, as to enable me to excavate with apparently very slight, if any pain whatever, where previously he could not submit to the touch of the finger nail.

I at once communicated my discovery to several of my friends and offered to prepare a short article for a dental journal. The publishers of the DENTAL MISCELLANY kindly placed at my disposal the pages of their April number. In the mean time, however, I thought of the service it might prove to suffering humanity if at once published and the assistant editor of the *American Journal of Medical Sciences*, expressing his willingness to make room in the coming number, I offered him a short article calling the attention of the medical profession to its use, as an inexpensive and convenient form of actual cautery.\*

It may be well for me to explain that the ash of the wood being antacid and warm, I presume, effects the neutralization of the fluids and the desiccation of the dentine; while the crushing of the ash and charcoal into the cavity, enables the operator to easily reach the floors of fissures, undercuttings, or irregularities of contour.

Finally, the effect may be much improved by gradually increasing the heat, until the incandescent coal of fire itself, may be momentarily applied at first to limited surfaces, and eventually crushed into the cavity, thus spreading over all the inequalities of the floor and walls.

It would hardly seem necessary to call attention to the fact, that great care must be exercised where the cavity approaches the pulp of the tooth, lest inflammation or death of the same might be induced, and in all cases the suffering from the actual cautery, will be trifling in proportion as the skill of the operator, enables him to make the touch instantaneously.

At present I am experimenting, with the hope of making the wood more inflammable and the ash more effectual, by preparing the material to be burned, by previous treatment, as suggested in the article in the *American Journal of the Medical Sciences*.

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#### UNIVERSITY OF PENNSYLVANIA.

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*To the Editor of "JOHNSTONS' DENTAL MISCELLANY":*

SIR—In an article on "American Degrees in Europe" (in your issue of March) by Mr. Wright, D.D.S., he alludes to the "University of Pennsylvania," and to the advertisements of the sale of its degrees in

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\* See *American Journal of the Medical Sciences* for April, 1877, page 561.

Europe. I fancy Mr. Wright means the "*Pennsylvania University*," whose "bogus diplomas" excited the wrath of medical men on both sides of the water, and the similarity of whose name has caused it to be confounded with the oldest American medical school on this continent. The "University of Pennsylvania," having been organized under a "Royal Charter," has always been placed upon the *Ad Eundem* list of the British colleges, and is acknowledged by them; though, of course, American graduates, like those of the British schools, have to receive a *special license* to practice in England. As an Edinburgh man, I can testify to the high respect entertained for the graduates of the *best* American colleges, by the British medical profession, but on the continent there is more prejudice, owing to the numerous new-fangled degrees conferred by our colleges upon all sorts of aspirants to medical honors—"Ph. D.," for example, meaning in Europe "Doctor of Philosophy," is now, in some parts of the United States, conferred upon the so-called "Doctors of Pharmacy." The *abuse* of titles is an American failing. QUIDNUNC.

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### BOOK NOTICES.

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LIST OF MEMBERS OF THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.  
1876: Press of Messrs. Wyman & Sons, London.

This interesting little pamphlet accompanies the February issue of the Transactions of the same Society. Besides an alphabetically-arranged list of members, there is another table, geographically arranged, so as to show the distribution of membership. We note among the members from "America": Robert Arthur, M.D.,\* Baltimore; Charles W. Ballard, M.D.,\* New York city; Dr. Barnum (honorary), New York city; E. A. Bogue, M.D., D.D.S., New York city; Thomas E. Bond, M.D.,\* C. D. Cook, Brooklyn; E. J. Dunning, M.D.,\* New York city; Daniel Harwood, M.D.,\* Boston; J. H. McQuillen, M.D., D.D.S., Philadelphia; A. L. Northrop, M.D., D.D.S., New York city; A. Snowden Piggott, M.D.,\* Baltimore; Joshua Tucker,\* Boston; J. D. White, M.D.,\* Philadelphia. Besides these, Canada is represented by W. G. Beers, L.D.S., Montreal, and Brazil by Signor J. F. Vegas,\* Bahia.

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GERMAN DENTAL ALMANAC.—We had the pleasure of receiving a new product of dental literature, in shape of a "Dental Almanac" for the year 1877, by Adolf Petermann, D.D.S., in Frankfort-on-the-Main, Ger-

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\* Corresponding members.

many, containing the names of all the practicing dentists in the German Empire, alphabetically arranged; when and where graduated, or examined by the proper authorities; their respective addresses; also, *fine* lithographs of three prominent German dentists. It contains, also, an alphabetically-arranged list of the German cities, the number of inhabitants, and names of dentists in each; the dates and places of dental meetings; the name of every dental journal, where and when published; the different dental depots; and last, but not least, a very *spicy* correspondence, which was carried on between the author and several dentists in reference to their *assumed* "Dr.," they having been in possession of *forged* or *bought* diplomas.

Dr. Petermann is entitled to credit for the great trouble and expenditure he has had in getting up this "Almanac." It ought to receive a place in the library of every dentist. The author promises to enlarge next year's issue considerably; the names of the dentists in Austria and Hungary are to be added to those of the German Empire.

There will appear, probably within this year, a German translation of "Harris' Principles and Practice," from the pen of Dr. Petermann.

We congratulate him on his enterprise, and wish him all the success which he so richly deserves.

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## NOTES.

### Baltimore College of Dental Surgery.

The thirty-seventh annual commencement was held on Friday, March 9th, 1877, at the Academy of Music, Baltimore.

President of the Class, John E. La Motte; Vice-President, Luke J. Pearce; Secretary, James E. Shreeve; Treasurer, Robert Y. Henley, Jr.

PROGRAMME.—Prayer, by Rev. Dr. W. M. Postlethwaite. Announcement of Graduates, by Prof. F. J. S. Gorgas, Dean. Conferring of Degrees, by Prof. F. J. S. Gorgas, Dean. Valedictory Address, by William H. Dwinelle, M.D., D.D.S., New York. Address, by George Homer Bowman, of the Graduating Class. The exercises were accompanied by appropriate music.

NAMES OF GRADUATES AND THE SUBJECT OF THESIS ARE AS FOLLOWS:—Pauline Boeck, Germany, Caries of the Teeth. George Homer Bowman, Virginia, The Dental Pulp and its Diseases. Thomas Washington Crozier, Virginia, Extraction of Teeth. Elias Drayton Earle, Florida, Operative Dentistry. Hammett Xavier Gale, Ohio, The Art of Applying Artificial Teeth. Walter S. Harban, Maryland, The Effects of Diseased Teeth on the System. Sandy Stuart Harris, Virginia, Caries of the Teeth. Robert Yates Henley, Jr., Virginia, First Dentition. Thomas Huggins, England, The Fifth Pair of Nerves. Frederick Koerner, Maryland, Nitrous Oxide Gas. Benjamin Lanier Lane, Georgia, Circulation of the Blood. John E. La Motte, Maryland, Dental Ca-

ries. Luke Johnson Pearce, Maryland, Dental Surgery. Charles Hector Reynolds, L.D.S., Canada, Morbid Effects of Dentition. James Mathews Roberts, Maryland, Dental Development. James Edwin Shreeve, Maryland, Comparative Anatomy of the Teeth. Henry Singruen, Germany, Odontalgia. Alonzo Stouch, Pennsylvania, Characteristics of the Teeth. Marion William Williams, Tennessee, Dental Hygiene.

#### TO ALL WHOM IT MAY CONCERN:

Please to take notice that the President, Dr. G. R. Thomas, has appointed the following Fellows of the Michigan Dental Association to fill the Standing Committees, viz.:

ANATOMY AND HISTOLOGY.—D. C. Hawxhurst, D.D.S., Battle Creek; E. G. Douglass and G. W. Stone, M.D.

PHYSIOLOGY.—Prof. J. A. Watling, D.D.S., Ypsilanti; W. D. Tremper, D.D.S., and R. H. Tremper, D.D.S.

CHEMISTRY AND MATERIA MEDICA.—I. Douglass, D.D.S., Romeo; R. S. Bancroft and J. E. Post, D.D.S.

HYGIENE.—B. T. Spellman, Detroit; J. Lathrop and H. H. Jackson.

PATHOLOGY AND SEMEIOLOGY.—J. A. Robinson, D.D.S., Jackson; G. H. Mosher, D.D.S., and Thomas Rix.

THERAPEUTICS.—J. W. Finch, Adrian; M. H. Knapp and W. P. Morgan, D.M.D.

SURGERY.—D. W. Smith, Jackson; W. H. Jackson, D.D.S., and E. Hunter.

EDUCATION AND ETIQUETTE.—E. S. Holmes, D.D.S., Grand Rapids; T. R. Perry and J. C. Parker.

PUBLISHING.—E. S. Holmes, D.D.S., Grand Rapids; G. R. Thomas, D.D.S., and W. D. Tremper, D.D.S.

EXECUTIVE.—G. L. Field, D.D.S., Detroit; J. A. Watling, D.D.S., and D. W. Smith.

With the President, Vice-President, Secretary and Treasurer Ex-officio.

BOARD OF CENSORS.—Prof. J. A. Watling, D.D.S., for one year; Dr. C. Hawxhurst, D.D.S., for two years; W. H. Jackson, D.D.S., for three years.

CONSULTING AND VISITING.—G. R. Thomas, D.D.S., for one year; A. T. Metcalf, D.D.S., for two years; B. T. Spellman for three years.

These gentlemen are expected to be prepared, and to report, either in person or through the Chairman of their respective committees, on some point of the general subject assigned them, at the next session of the Michigan Dental Association, to be held at Ann Arbor on the 9th day of October, 1877, at 2 o'clock P. M.

The Secretary would respectfully suggest the following points for discussion by the several committees, viz.:

ANATOMY, ETC.—The Anatomy and Histology of the dental pulp.

PHYSIOLOGY.—The provisions of nature for the protection of the dental pulp threatened with disease, and to what extent can they be relied on?

CHEMISTRY AND MATERIA MEDICA.—The chemical constituents and medical properties of Lacto Phosphate of Lime.

HYGIENE.—The prophylactic measures best adapted to prevent the consumption of the dental organs.

PATHOLOGY AND SEMEIOLOGY.—The symptoms of Exodontosis (dental exostosis), and the nature of the affection.

THERAPEUTICS.—The medicinal remedies for Dental Neuralgia.

SURGERY.—The surgical treatment of the Dental Pulp, diseased by the decomposition of the dentinal tissues.

There are other very important subjects to be considered at this meeting, and it is hoped and expected that every member of the Association will be present, and prepared to do his duty.

A general invitation is hereby extended to all dentists—and every one interested in dental progress—to be present.

E. S. HOLMES, *Sec. M. D. A.*

JOHNSTONS'

# Dental Miscellany.

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VOL. IV.—*MAY*, 1877.—No. 41.

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## A PARTING ADDRESS

DELIVERED TO THE STUDENTS OF THE PENNSYLVANIA COLLEGE OF DENTAL  
SURGERY, FEBRUARY 23D, 1877.

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By EDWIN T. DARBY, D.D.S., Professor of Dental Histology and Operative Dentistry.

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PUBLISHED BY REQUEST OF THE GRADUATING CLASS.

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GENTLEMEN:—We meet to-day for the last time in the capacity of teacher and class; but before bidding you adieu, I would fain speak a few words of a practical character.

Up to the present time, our attention has been occupied in the consideration of such subjects as would naturally devolve upon the teacher of Dental Histology and Operative Dentistry. I have endeavored, to the utmost of my ability, to lead you safely and surely, step by step, through the science of Operative Dentistry, as it has developed to the present day. It has ever been my purpose and desire to promulgate such theories only as will bear the test of time; to advocate only such methods as you, in your own experience, will find useful and valuable; to endorse and recommend to you such appliances and fixtures as in my judgment are best calculated to meet the requirements intended—in a word, to fulfill conscientiously the duties which I assumed when the course commenced. If in aught I have failed, I am sure you will willingly overlook the short-coming, when you remember the brief period for preparation that was afforded me previous to the opening of the regular session.

As I look upon you to-day, I am reminded that many of you, perhaps most of you, are about starting out for the first time as professional men; and I am convinced that I shall not have performed my whole duty, if I do not give you a few practical hints or suggestions.

Many a young man has left college full of theories; with a brain, it may be, well balanced with facts; and yet, at the very outset of his professional career, has made some blunder or left undone some simple thing, which has turned the current of his whole life. It is my desire then, gentlemen, that you, as you float or paddle down the river of life, shall steer clear of all breakers which may chance to be in your course, and in due time reach the broad ocean of success and prosperity which you desire, in the profession you have chosen. And first, as to location. About the first inquiry of the newly-made graduate is, Where shall I locate? In what part of this broad earth shall I pitch my tent, and what shall be the radius of my influence? Shall I locate in the city, where centres the wealth, the learning and masses of society? or shall I begin my labors in some country town or village hamlet? Each of you must decide this question for himself; because circumstances which would make success almost sure to one, would make failure almost inevitable to another.

At first thought it would be said that all the large cities are overfull of practitioners of dentistry. To this I would reply, as Daniel Webster replied to a young man who sought his advice in reference to a location in which to practice law, feeling that the cities were too well occupied with lawyers. "Yes," said the great statesman, "the room at the *bottom* is all taken, but there is plenty of room *up higher* for able men." There is always room in every city, in every town, in every village, for thorough, conscientious dentists.

But how shall I become known? What means shall I adopt to bring myself prominently before the public? Shall I resort to newspaper advertisements, to the distribution of circulars or business cards? Shall I display from my office front large signs emblazoned with gold, and seek thereby to attract the attention of passers-by? Shall I make the way to my office entrance so plain, that a man, though he runs, may read? No. Printers' ink and professional worth rarely ever go together. These are the means adopted by the charlatan, but are beneath the dignity of regular graduates. It is true, such things have their influence with certain classes of society; but the refined and educated avoid those who adopt them. Such publicity sometimes helps one to flourish for a season; but, like Jonah's gourd, which grew in a night, it wilts before the rays of to

morrow's sun. Adopt such methods, then, as shall make your growth more like the forest oak, which grows noiselessly but enduringly, sending its roots far out into the solid soil, and when once formed defies the blasts of the hurricane. Let your advent into any community where you may have decided to locate be that of a modest, unostentatious gentleman. If it seems best to put your business card in the newspaper, let it be your card *only*, with no mention of specialties. No cuts of teeth—no large or showy type. Let your sign be modest, both in style and size. If you wish to add your degree, do so; but don't put beneath your name "Dental Surgeon" or "Surgeon Dentist." The public will understand that if you are a dentist you are a surgeon for the mouth and teeth. Remember that real worth is most commonly found in the modest and unassuming. Some of you may decide to locate in communities where there are other dentists. If so, you must not forget that courtesy requires you to call upon these men and make known to them your intentions. Do so in a modest way. Make no pretensions of superior skill, or seek to make them feel that you have come to deprive them of patients. Endeavor to be on friendly terms with members of your profession. If they are honorable men, associate with them; and if your advantages have been superior to theirs, seek in every possible way to bring them to your standard of excellence. Do an educational work amongst them. If they are behind the times in practice, educate them in all that is new and valuable. Above all, avoid the practice, which many have, of speaking disparagingly of other dentists. You will find that it is better to say nothing against, if you cannot say aught in favor, of a professional brother. There is nothing which so effectually degrades a profession as the petty jealousies and sarcastic flings which are often indulged in by its members. An honorable man may receive them, but will not return them. Aim, then, to form the habit of speaking well of all who may be engaged in the same calling, unless circumstances render it impossible for you to do so truthfully.

In the selection of your office, endeavor to have it so arranged that you can have good light. A north light is preferable, because most steady; but a light so arranged as to get the sun upon yourself and yet not interfere with your operating is, in my judgment, the most healthful. The dentist in full practice is too much shut up, and needs the sun, and, if possible, open air, to help him to avoid the yellow skin, the dyspeptic stomach and nervous prostration which are, I regret to say, too frequently the concomitants of our calling. Form the habit early of spending an hour or more in the open air daily. If your means will justify it, keep

a horse and ride horseback morning or afternoon. If you cannot afford the horse, walk; row in a boat; play base ball; do anything that will keep both mind and body in activity.

Let your office be furnished neatly, not necessarily expensively, but in a manner becoming your means and position. Avoid all appearance of quackery, such as show cases of artificial teeth, specimen sets, dentifrices, etc., etc. Avoid also all ghastly sights—as skeletons or cross-bones, skulls with toothless maxillaries. Such things are unpleasant to most ladies, and only tend to make the dental office repulsive. Avoid, as much as possible, all disagreeable odors—as creosote, carbolic acid, chloride of lime, ether and the like; all these suggest at once to the mind the pain and treatment which may follow. Look to it that all about you is orderly. Be careful about your personal cleanliness—your hands, your linen, your clothes. If possible, wear in your office white linen coats or jackets that can be washed frequently. Ladies do not like to lay their faces against a greasy old coat, which has been worn for months or years, and has rubbed against the heads of others. See to it that your instruments are clean, and not covered with rust or blood, decomposed tooth pulp or bone. Let your intercourse with your patients be that of a gentleman. Be courteous in all things. Avoid the habit of much talking, and upon topics which have no special bearing upon that for which you are visited. Every community has its scandal-mongers or gossip-bearers, and what you may have inadvertently said to a patient about Miss A.'s artificial teeth or Mrs. B.'s cleft palate is liable to be retailed at large, and with it that accumulation which is sure to be added to gossip in its course, and which may do you great injustice, if not absolute injury.

In the selection of your associates, choose men of standing. Bear in mind that men are known by the company they keep. Better by far spend your hours alone, than in the company of men whose influence is such as to hinder rather than help you in the race you are to run.

Form, early in your professional life, habits of industry. You cannot expect to jump, as it were, into a full practice, and you may have at first many leisure hours; but don't spend them idly. If you are of a mechanical turn of mind, you can go into your laboratory or workshop, and make many useful things which you would otherwise be obliged to buy. Take the dental journals, and keep well posted in all the new methods of practice. Be awake and ready to grasp everything new or valuable in the profession of your choice. Remember that, in a professional life, to sleep is to die. If you are not advancing you are receding.

Have office hours and *keep* them. Be *in* your office during business hours, and not loafing about some drug store, or sitting upon some dry-goods box, with heels dangling in the air. So far as practicable, work by appointment. Arrange your time systematically: make but one appointment for a given hour, and insist upon punctuality. Don't keep people waiting longer than is absolutely necessary; start out with the feeling that time is valuable—not only yours, but your patients'. Give engagement cards, and impress upon the minds of your patients that the time engaged by them is theirs, and to be paid for whether occupied or not, unless previously excused, or reasonable notice given of their inability to fulfill the appointment.

Regulate your charges according to the service rendered. No one is so well able to judge of the value of an operation as he who performs it; but never, in any instance, receive pay for operations performed, unless you are certain that they are valuable of themselves. To take pay for a poor or worthless filling is little better than stealing the money from your patient's pocket, or extorting it by fraud. If you fail (and failures are inevitable), acknowledge it, and try again. It is only by these repeated failures that the honest man rises to his most brilliant successes. Don't overestimate your skill, nor boast of your success. Be thorough in all that you undertake, and endeavor to excel in each operation; but don't criticise disparagingly the operations of other men. The man who is evermore denouncing the practice of others, and parading the excellence of his own, is heaping up for himself a pillar of wrath and just indignation which shall some day fall upon his own head, when exposed to the notice of honorable men. Do not seek to build yourself up by pulling others down. Let your work speak for itself—if it is good, people will find it out, and in the end you will receive the acknowledged appreciation which it deserves. In this world of ours there is enough for all. Think not that those who have gone before you have reaped and gathered the field, leaving nothing for those who come after. The professions are not half full of honest, conscientious, able men. In my judgment, there is no profession or calling which needs a fresh and large supply of just such men as the profession of dentistry. In the past our growth has seemed rapid, but, like all rapid growths, it has been rank. In the future it must be a growth which bears the fruit of intellect, of culture, of refinement, of conscientiousness. It is true a man may sail under false colors for a time—his operations may be poor or worthless—but sooner or later they will tell against him. The public are rapidly becoming educated, and each year better able to discriminate between

the good and the bad; and he who expects to succeed must render faithful services—otherwise his practice will gradually, but none the less surely, leave him. Good operators are springing up all over our great land, and with all our modern appliances, there is little excuse for men who perform poor work, and such must stand aside to make room for their superiors.

I am aware that the beginner has some things to contend with. The absence of experience is apt to lessen one's confidence in his ability; a boyish face is often an obstacle to one's rapid success—but time will remove both of these. Stick your stakes where you feel that you are needed; and although your office may not be thronged with patients the first year, it is no evidence that it will not be the third. If you are ambitious men, you will, of necessity, experience some dark and gloomy forebodings as to future success; but remember that others have realized the same, and are to-day successful practitioners of dentistry.

“Let us then be up and doing,  
With a heart for any fate,  
Still achieving, still pursuing,  
Learn to labor and to wait.”

I summon you, then, gentlemen, to an honorable profession; to a field of usefulness, to a harvest of plenty. I summon you to a life of activity, to a mission of mercy, and to a reward of fame. Go forth, then, full of hope, full of courage, full of confidence. Go forth to receive the hearty congratulations of dear ones at home. Go forth to engage in that calling which henceforth is to occupy your attention, enlist your energies, and call forth the genius and talent of your lives.

Nor can I more appropriately close than by quoting words long ago uttered by one of America's noblest poets:

“So live that when thy summons comes to join  
The innumerable caravan that moves  
To that mysterious realm where each shall take  
His chamber in the silent halls of death,  
Thou go not like the quarry slave, at night,  
Scourged to his dungeon; but, sustained and soothed  
By an unfaltering trust, approach thy grave  
Like one that wraps the drapery of his couch  
About him, and lies down to pleasant dreams.”

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SPRINGFIELD, ILL., has a female dentist. She is said to be a lady of gentle extraction.—*N. Y. Commercial Advertiser*. Such a woman is bound to pull through life—peaceably if she can, forcep-ly if she must.—*Norristown Herald*. Such discouraging talk is calculated to make the young woman feel down in the mouth.—*Burlington Hawk Eye*.

## EXTRACTING SIX-YEAR MOLARS.

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By DR. A. W. KINGSLAY, of Elizabeth, N. J.

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ADDRESS BEFORE THE NEW JERSEY STATE DENTAL SOCIETY.

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MR. PRESIDENT AND GENTLEMEN: In considering the subject given me to write upon, I find I cannot satisfy myself, and fear I could not meet the expectations of the Society for whom I write, without so far changing the subject as to make it the treatment of the six-year molars, instead of the extraction of the six-year molars.

If I could prove that these teeth ought always to be sacrificed, I should simplify the matter much, and we should then only have to determine the proper time for their removal. Or, if I could establish the position that they do not differ materially from the other teeth in any respect, I should then draw an inference that, like them, they should stand on their own merits, and should be extracted only when their loss would be the lesser of two evils. I think we should all concede that these positions are extreme and erroneous, and that we shall satisfy ourselves better to take and pursue a medium and conservative course in our treatment of the teeth committed to our care.

In regard to the first proposition, I am aware that there are some members of the profession who seem to almost believe that an all-wise and beneficent Creator has made a mistake, and given us four more teeth than we really need. Or, if man was as originally created, upright and good, as God pronounced all His work of creation to be, still, among the many inventions he has sought out, is the horrible one of so debasing himself as to invent and pursue such courses of living as to produce a degeneracy that can be atoned for only by the sacrifice of one-eighth part of his teeth. That the teeth under consideration are sometimes, perhaps we may say frequently, more liable to decay and loss than the other molars, I suppose no one will dispute. This liability comes, doubtless, in part from defective nutrition in early childhood. Hence we find them subject to those deviations from the normal forms of the teeth which are consequent upon interrupted development of the dental tissues, resulting in atrophy and honey-combed enamel, etc. Where the incisors and cuspidati are so affected, we find the six-year molars almost invariably in the same condition, while the remaining molars and bicuspidis will present a perfectly normal condition, having been formed after the diseased condition which affected the before-mentioned teeth had passed away.

These teeth make their appearance at that period of child-life when, from the ignorance of parents, they are often supposed to belong to the first set, and consequently not requiring much attention in the way of preventive treatment. They are often companions for a time of teeth of the first dentition, which are so decayed as to make their contact injurious. At this time we also find the gums in an unhealthy condition, in consequence of the existence of abscess and irritation, and even inflammation, caused by the loosened and shedding teeth. When we consider that these teeth must exist in the mouth for six years before the other molars make their appearance, we cannot wonder that they often fall victims to the deadly influence by which they are surrounded. In considering the second proposition, I think it must be conceded that these teeth do differ essentially in some cases from the other molars.

This difference, in part, I have already pointed out, consisting mainly of difference in structure which, we must concede, is accidental and exceptional. The other difference, that of unhealthy surroundings, is, as we find teeth at the present day, so general, that we are forced to acknowledge it as the rule, rather than the exception. In deciding the question of extracting or retaining these teeth, we must take into our account the all-important one of saving for our patients the greatest number of useful teeth possible. This question is complicated, and exceedingly difficult to determine. If we were gifted with prescience, so that we could determine what would be the tendency to decay and loss in the other teeth, then should we be guided by the noon-day sun of certainty in our path. Has it not been the mortifying experience of us who have been long in the profession, that when we exercised our best judgment, and put forth our strongest arm to accomplish the greatest good to our patients, to find, after all, our good designs defeated by some new and unlooked-for development of decay or disease in perhaps the very tooth which we considered safest and best. There is one fact which, I must confess, has great weight in my own judgment in this connection, and that is that I occasionally find the molars under consideration the best and soundest in the mouth, and sometimes, though less frequently, the only ones remaining in the mouth. Perhaps the most important point to be considered in regard to these teeth is their relation to the other teeth in cases of crowded condition and decay on their approximate surfaces. We all acknowledge the difficulty of treatment and uncertainty of results in teeth in this condition; and sometimes, where we have succeeded in saving the first molars, in after years, when the other teeth have made their appearance in a crowded condition, and we have found the

approximate surfaces badly decayed and treatment difficult and uncertain, we have wished we had removed the teeth we labored so faithfully to save, and sometimes we are forced to sacrifice them at a late day, when their earlier removal would have been attended with greater good to the patient. In case these teeth escape that rapid decay which sometimes attacks and ruins them almost as soon as they make their appearance, but still decay early, before the other molars make their appearance, and decay in such a manner as to convince us that their removal will be necessary, an important question arises as to the proper and best time for their removal. These teeth are necessary to the comfort of the patient in masticating his food, and should be retained in the mouth, if possible, until the twelve-year molars make their appearance. The too early extraction of them would cause a contraction of the jaw, which, even at the best, is most likely to be too much contracted. I am aware that some one who has written on this subject lately is definite, and fixes the time as soon as the person has passed the eleventh year. I cannot see any good reason for this advice. I know that we generally find the second molars appearing at the age of twelve years, but there are often exceptions to this. I saw, only yesterday, one of my patients, a good-sized girl, whose first molars I have determined to extract, because they are so decayed that they cannot be saved permanently, and the teeth are in a crowded condition. She has passed her fourteenth year, and it will evidently be some months before the second molars will appear. Would it have been wise to extract these teeth three years ago? We sometimes see cases where these teeth are extracted very early to give relief from suffering; the second molars come so close to the bicuspid as to keep them crowded as closely together as they are where all the teeth are retained. I think this never happens where the teeth are retained until the second molars appear.

When we extract these teeth to make room for the remaining ones, we desire to divide the room gained about equally between the other molars and the bicuspid, gaining, perhaps, a little more room for the incisors and canines. I think we are more certain to accomplish this by delaying the operation until the twelve-year molars have come. Having noticed some of the relations and peculiarities of these teeth, which should influence us in determining what to do with them, I am ready now to speak of their treatment. I do not know how I can present this matter better than to improvise an imaginary clinique, and bring our patients before us as we see them from time to time, and decide in regard to their treatment as they come to us individually.

First, then, we have a nice child, accompanied by his mother, who has always come with him in former times. We have already filled two of his infant teeth. We have encouraged him to try to keep his teeth clean. We have tried to influence the mother to give him such food as would produce good bone, as well as good muscle. The mother has seconded us in all we have tried to do for the child, even brushing his teeth herself where he did not seem thorough enough. Child is seven years old. Lower molars fully developed, upper ones coming well, but not as fully cut as lower—all perfect and promising. We dismiss him, with praise for his care of himself.

No. 2.—Eight years old, has been taught to clean his teeth. Infant teeth have never been filled, six-year molars all in position, and all sound. Infant molars decayed on posterior approximate surfaces. We will cut these teeth away clean from permanent teeth, so that contact is completely removed, and food will be likely to be washed out by fluids taken in drink.

No. 3.—Same age and same conditions, with the addition of small decay in centre of crowns of lower teeth. We will fill these with gold if we are confident we can save the teeth permanently, otherwise with an amalgam, separating the infant molars from them, as in preceding case. We dismiss him, directing him to come at some specified future time.

No. 4.—Same age and conditions, with the addition of decay in the upper six-year molars. Same treatment as in preceding case. In these cases, if we fill with anything except gold, it is with the intention of removing the fillings when the patient arrives at the age of fourteen or fifteen, and filling with gold, if we then think it possible and desirable to save them permanently.

No. 5.—Nine or ten years old. Nothing ever done for him. Molars all considerably decayed on crowns and anterior approximate surfaces; not a good prospect of saving them permanently. Fill temporarily, so as to give patient use of them till second molars make their irruption, when we shall probably be obliged to remove them.

No. 6.—Eleven or twelve. Teeth in same condition as preceding case. At this age, if these teeth cannot be saved permanently, we should not hesitate to extract them at once, if they are troublesome.

No. 7.—Is a different patient from any of the former ones, quite frequently. He is of Irish parentage. He is only seven or seven and a half. His six-year-olds evidently decayed as soon as they came. Never has cleaned his teeth; don't know anything about that matter. He has toothache; has come to have the tooth extracted. Six-year-olds all decayed; lower ones look like two extinct volcanoes; grinding surface all

gone; walls thin and brittle; pulp completely exposed. Of course we extract the troublesome ones, and expect to be called on soon for same treatment for the others. Those teeth are made out of pork, cabbage and potatoes. Comment is unnecessary.

No. 8.—Is fourteen or fifteen. Has, in addition, twelve-year molars. Has always cleaned his teeth well. Teeth all sound and regular. A good prospect of saving all. None, of course, to be extracted.

No. 9.—Same age, with like number of teeth, but in quite different condition. Teeth much crowded. Six-year molars all decayed on crowns, and also on approximate surfaces. Twelve-year molars show signs of decay on anterior surfaces, bicuspid beginning to decay on posterior surfaces. The best we can do for him is to extract all the six-year-olds.

No. 10.—Represents a class from fourteen to eighteen years of age, having all the teeth except the wisdom tooth. Teeth all in a crowded condition. Canines all having an anterior projection resting on the lateral incisors and first bicuspid, with only about half space enough to allow them to take their normal place. Upper and lower are alike crowded, giving the lower jaw somewhat of a triangular shape. We will extract all the six-year molars, and often these teeth will, in the course of a year or two, take their proper places alongside of the other teeth. Sometimes, however, owing to the peculiar antagonism of lower with the upper, the bicuspid are held in position so that the canines are prevented from taking the desired place. In these cases a little help from a plate and rubber rings will be necessary, but this belongs to another subject.

No. 11.—Same age as preceding patient. Here we have a case of atrophy and honey-comb enamel. The incisors, cuspidati and six-year molars are equally affected. The teeth in these cases are not always crowded, but I think we shall be more likely to save the teeth generally by extracting the six-year-olds. At the age of twenty and older, where all the teeth have come and have not previously been subject to treatment, we cannot expect so much good from treating the six-year molars as a class, and shall probably do as well to treat them as we do the other teeth, endeavoring to save all. If these teeth are extracted at too late a period, the remaining teeth do not approach each other in so complete a manner, the roots having a tendency to hold their position in the jaw, while the teeth tip over and incline strongly toward each other. This is particularly true of the twelve-year molars; moreover, when the operation is performed too late, the alveolar process is absorbed away from the antagonizing teeth, rendering them liable to decay, and to become sensitive and troublesome, and to sometimes loosen and come out prematurely in after life.

## INAUGURAL ADDRESS OF DR. JOHN W. DRAPER,

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As President of the American Chemical Society. Delivered in Chickering Hall, New York, November 16, 1876.

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(Concluded.)

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And now, while we have accomplished only a most imperfect examination of objects that we find on the earth, see how, on a sudden, through the vista that has been opened by the spectroscope, what a prospect lies beyond us in the heavens! I often look at the bright yellow ray emitted from the chromosphere of the sun, by that unknown element, Helium, as the astronomers have ventured to call it. It seems trembling with excitement to tell its story, and how many unseen companions it has. And if this be the case with the sun, what shall we say of the magnificent hosts of the stars? May not every one of them have special elements of its own? Is not each a chemical laboratory in itself? Look at the clusters in the sword-handle of Perseus; in Cassiopeia, a universe of stars on a ground of star-dust; in Hercules, of which, as astronomers say, no one can look at for the first time through a great telescope without a shout of wonder—the most superb spectacle that the eye of man can witness! Look at the double stars, of which so many are now known, emitting their contrasting rays, garnet, or ruby, or emerald, or sapphire! Each is in accordance with its own special physical conditions, though all are under the same universal ordinance.

Now here a fact of surpassing importance presses itself on our attention. The movements taking place in those distant bodies are taking place under the same laws that prevail here on earth, and in our solar system. The law of gravitation, as developed by Newton, bears sway in all these distant worlds. In them bodies attract each other with forces directly as their masses and inversely as the squares of their distances. There the laws of the emission, absorption and transmission of light are the same as they are with us. There ignited hydrogen gives forth its three rays, the same rays that it gives forth to us. In the uttermost parts of the universe the law of definite combination, the numerical law, and the multiple law, stand good. Sodium absorbs its two waves of definite refrangibility, and iron gives in the spectra its more than a hundred lines—more than a hundred silent but convincing witnesses of the uniformity of the constitution of the universe. There the number of vibrations that constitute a ray of definite refrangibility is the same we have found it to be here. In the enormous heat of those cen-

tral suns, the dissociation of molecules may be of a higher order than we can reach artificially, but the law under which it takes place is a continuation of the law here. There, though the weight of a given mass of matter is different from what it is with us, it is nevertheless determined by the law that determines it here—the law of gravitation. There energy is indestructible, and is measured as it is measured among us, by work. Then is there any boundary that we can assign to natural law—is it not omnipresent, universal? •

Perhaps there is no exaggeration in the assertion—for there seems abundant proof of its truth—that the light by which we see some of those distant orbs has crossed through such a prodigious space that millions of years have transpired during the journey. Then the phenomena it brings to us are those that were engendered in the beginning of the vast time so passed. Whatever there is that is in harmony with facts now happening here, is to us an unimpeachable evidence that the laws which were governing in those old ages have undergone no depreciation, but are active as ever until now. Then shall I exaggerate if I say that those laws are eternal in duration?

Infinite in influence, eternal in duration! what a magnificent spectacle! In the resistless energy of the motions of the universe, is there not Omnipotence? The Omnipotent, the Infinite, the Eternal—to what do these attributes belong?

Shall the man who stands forth to vindicate the majesty of such laws be blamable in your sight? Rather shall you not with him be overwhelmed with a conception so stupendous? And yet let us not forget that these eternal laws of nature are only the passing thoughts of God.

But grand as this is, there is something still grander. There is another temple into which we have to pass—not that of the visible, but that of the invisible. We must persist in the invasion we have made, in the revolution we have brought about in physiology. We have to determine the laws which preside in the nervous system of man, and discover the nature of the principle that animates it. Is there not something profoundly impressive in this, that the human mind can look from without upon itself, as one looks at his phantom image in a mirror, and discern its own lineaments and admire its own movements? My own thoughts have of late years been forcibly drawn to this, from a recognition that the interpretation by the mind of impressions from without takes place under mathematical laws; as, for instance, that when external ethereal vibrations create in the mind a certain idea, that same idea will arise when the vibrations are doubled, or tripled, or quadrupled in

frequency ; but other ideas will be engendered by vibrations of an intermediate rate. Yet what these ideas will be may be predicted. It is true that this is only an optical case, but it extends the view that has been offered to us by a study of the structure of the ear. In the labyrinthine compartment of that organ, the ultimate fibres of the auditory nerve are laid on the winding plane of the spiral lamina, in ever-decreasing lengths, each capable of trembling to the sound which is in unison with it—a mechanical action truly, answering to the sympathetic vibration with which the strings of a piano will respond to the corresponding notes of a flute—and these are translated by the mind into all the utterances of articulate speech, all the harmonies of music—speech that engenders new ideas within us ; strains which, though they may die away in the air, live forever in the memory. The exquisite delight we experience in listening to the works of our great composers arises thus in mechanical movements, which are the issue of mathematical combinations. The unseen world is under the influence of number !

But what is number except there be one who numbers ? When Pompey, in his Syrian war, broke into the holy of holies at Jerusalem, he expressed, as Tacitus tells us, his astonishment that there was no image of a Divinity within—the shrine was silent and empty. And so, though after death we may anatomize and explore the inmost recesses of the brain, the veiled Genius that once presided there has eluded us, and has not left so much as a phantom trace, a shadow of himself.

The experiments of Galvani and Volta have not yet reached their conclusion : those of Faraday and Du Bois Raymond have only yielded a preliminary suggestion as to the nervous force. Excepting the great sympathetic nerve, the nervous fibres themselves are, as is well known, of two classes—those that gather the impressions of external things and convey them to the nerve centres, and those that transmit the dictates of the will from within outwardly. The capabilities of one of the former—the apparatus for sight—have been greatly improved by various optical contrivances, such as microscopes and telescopes, an earnest of what may hereafter be done as respects the four other special organs of sense ; and as concerns the second class, the result of mental operations, the resolves of the will, may be transmitted with greater velocity than even in the living system itself, and that across vast terrestrial distances, or even beneath the sea. Telegraphic wires are, strictly speaking, continuations of the centrifugal nerves, and we are not without reason for believing that it is the same influence which is active in both cases.

In a scientific point of view, such improvements in the capabilities of

the organs for receiving external impressions, such extensions in the distances to which the results of intellectual acts and the dictates of the will may be conveyed, constitute a true development, an evolution, none the less real though it may be of an artificial kind. If we reflect carefully on these things, bearing in mind what is now known of the course of development in the animal series, we shall not fail to remark what a singular interest gathers around these artificial developments—artificial they can scarcely be called, since they themselves have arisen interiorly. They are the result of intellectual acts. Man has been developing himself. He, so far as the earth is concerned, is becoming omnipresent. The electrical nerves of society are spread in a plexus all over Europe and America; their commissural strands run under the Atlantic and the Pacific.

In many of the addresses that have been made during the past summer, on the Centennial occasion, the short-comings of the United States in extending the boundaries of scientific knowledge, especially in the physical and chemical departments, have been set forth. "We must acknowledge with shame our inferiority to other people," says one. "We have done nothing," says another. Well, if all this be true, we ought, perhaps, to look to the condition of our colleges for an explanation. But we must not forget that many of these humiliating accusations are made by persons who are not of authority in the matter—who, because they are ignorant of what has been done, think that nothing has been done. They mistake what is merely a blank in their own information for a blank in reality. In their alacrity to depreciate the merit of their own country—a most unpatriotic alacrity—they would have us confess that for the last century we have been living on the reputation of Franklin and his thunder-rod.

Perhaps, then, we may without vanity recall some facts that may relieve us in a measure from the weight of this heavy accusation. We have sent out expeditions of exploration both to the Arctic and Antarctic seas. We have submitted our own coast to a hydrographic and geodesic survey not excelled in exactness and extent by any similar works elsewhere. In the accomplishment of this we have been compelled to solve many physical problems of the greatest delicacy and highest importance, and we have done it successfully. The measuring rods with which the three great base lines of Maine, Long Island and Georgia were determined, and their beautiful mechanical appliances, have exacted the publicly-expressed admiration of some of the greatest European philosophers, and the conduct of that survey their unstinted applause. We

have instituted geological surveys of many of our States and much of our Territories, and have been rewarded not merely by manifold local benefits, but also by the higher honor of extending very greatly the boundaries of that noble science. At an enormous annual cost we have maintained a meteorological signal system which I think is not equaled, and certainly is not surpassed, in the world. Should it be said that selfish interests have been mixed up with some of these undertakings, we may demand whether there was any selfishness in the survey of the Dead Sea? Was there any selfishness in the mission that a citizen of New York sent to equatorial Africa for the finding and relief of Livingstone? any in the astronomical expedition to South America? any in that to the valley of the Amazon? Was there any in the sending out of parties for the observation of the total eclipses of the sun? It was by American astronomers that the true character of his corona was first determined. Was there any in the seven expeditions that were dispatched for observing the transit of Venus? Was it not here that the bi-partition of Biela's comet was first detected? here that the eighth satellite of Saturn was discovered? here that the dusky ring of that planet, which had escaped the penetrating eye of Herschel and all the great European astronomers, was first seen? Was it not by an American telescope that the companion of Sirius, the brightest star in the heavens, was revealed, and the mathematical prediction of the cause of his perturbations verified? Was it not by a Yale College professor that the showers of shooting stars were first scientifically discussed, on the occasion of the grand American display of that meteoric phenomenon in 1833? Did we not join in the investigations respecting terrestrial magnetism, instituted by European governments at the suggestion of Humboldt, and contribute our quota to the results obtained? Did not the Congress of the United States vote a money grant to carry into effect the invention of the electric telegraph? Does not the published flora of the United States show that something has been done in botany? Have not very important investigations been made here on the induction of magnetism in iron, the effect of magnetic currents on one another, the translation of quantity into intensity, and the converse? Was it not here that the radiations of incandescence were first investigated, the connection of increasing temperature with increasing refrangibility shown; the distribution of light, heat and chemical activity in the solar spectrum ascertained, and some of the fundamental facts in spectrum analysis developed, long before general attention was given to that subject in Europe? Here the first photograph of the moon was taken; here the first of the diffraction spectrum was produced; here

the first portraits of the human face were made—an experiment that has given rise to an important industrial art.

Of chemistry it may truly be affirmed, that nowhere are its most advanced ideas, its new conceptions, better understood or more eagerly received. But how useless would it be for me to attempt a description in these few moments of what Professor Silliman, in the work to which I have already referred, found that he could not include on more than one hundred closely printed pages, though he proposed merely to give the names of American chemists and the titles of their works ! It would be equally useless and indeed an invidious task to offer a selection ; but this may be said, that among the more prominent memoirs there are many not inferior to the foremost that the chemical literature of Europe can present. How unsatisfactory, then, is this brief statement I have made of what might be justly claimed for American science ! Had it been ten times as long, and far more forcibly offered, it would still have fallen short of completeness. I still should have been open to the accusation of not having done justice to the subject.

Have those who gloat over the short-comings of American science ever examined the Coast Survey Reports, those of the Naval Observatory, the Smithsonian contributions, those of the American Association for the Advancement of Science, the proceedings of the American Academy of Arts and Science, those of the American Philosophical Society, the Lyceum of Natural History, and our leading scientific periodicals ? Have they ever looked at the numerous reports published by the authority of Congress on geographical, geological, engineering and other subjects—reports often in imposing quartos magnificently illustrated ?

Not without interest may we explore the origin of the depreciation of which we thus complain. In other countries it is commonly the case that each claims for itself all that it can, and often more than is its due. Each labors to bring its conspicuous men and its public acts into the most favorable point of view ; each goes upon the maxim that a man is usually valued at the value he puts upon himself. But how is it with us ? Can an impartial person read without pain the characters which we so often attribute to our most illustrious citizens in political, and, what is worse, in social life ? Can we complain if strangers accept us at our own depreciation, whether of men or things ?

We need not go far to detect the origin of all this—it is in our political condition. Here wealth, power, preferment—preferment even to the highest position in the nation—are seemingly within the reach of all, and in the internecine struggle that takes place, every man is occupied in

pushing some other man into the background. I fear that in political life there is no remedy for this, such is the violence of the competition, so great are the prizes at stake. But in the less turbulent domain of science and letters we may hope for better things. And those who make it their practice to decry the contributions of their own country to the stock of knowledge, may perhaps stand rebuked by the expressions that sometimes fall from her generous rivals. How can they read, without blushing at their own conduct, such declarations as that recently uttered by the great organ of English opinion, the foremost of English journals! *The Times*, which no one will accuse of partiality, in this instance, says: "In the natural distribution of subjects, the history of enterprise, discovery and conquest, and the growth of republics, fell to America, and she has dealt nobly with them. In the wider and multifarious provinces of art and science she runs neck and neck with the mother country, and is never left behind!"

There are among us some persons who depreciate science merely through illiterate arrogance; there are some who, incited by superficiality, dislike it; there are some who regard it with an evil eye, because they think it is undermining the placid tranquility they find in life-long cherished opinions. There are some who hate it because they fear it, and many because they find that it is in conflict with their interests.

But let us who are the servants of science, who have dedicated ourselves to her, take courage. Day by day the number of those who hold her in disfavor is diminishing. We can disregard their misrepresentations and maledictions. Mankind has made the great discovery that she is the long-hoped-for civilizing agent of the world. Let us continue our labor unobtrusively—conscious of the integrity of our motives, conscious of the portentous change which is taking place in the thought of the world, conscious of the irresistible power which is behind us! Let us not return railing for railing; but above all, let us deliver unflinchingly to others the truths that Nature has delivered to us!

The book of Nature! shall not we chemists, and all our brother students, whether they be naturalists, astronomers, mathematicians, geologists—shall we not all humbly and earnestly read it? Nature, the mother of us all, has inscribed her unfading, her eternal record on the canopy of the skies; she has put it all around us on the platform of the earth! No man can tamper with it, no man interpolate or falsify it for his own ends. She does not command us what to do, nor order us what to think. She only invites us to look around. For those who reject her she has in reserve no revenges, no social ostracism, no index expurgato-

rius, no auto da fé! To those who in purity of spirit worship in her heaven-pavilioned temple, she offers her guidance to that cloudy shrine in which Truth sits enthroned, "dark with the excess of light!" Thither are repairing, not driven by tyranny, but of their own accord, increasing crowds from all countries of the earth, conscious that, whatever their dissensions of opinion may heretofore have been, in her presence they will find intellectual concord and unity.

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MEETING OF THE FIRST DISTRICT DENTAL SOCIETY,  
AT THE RESIDENCE OF DR. WM. H. ATKINSON, TUESDAY EVENING,  
MAY 1, 1877.

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The minutes of the last meeting were read by the Secretary, and approved.

The President, Dr. Wm. H. Allen, stated that at the last meeting the by-laws of the Society had been revised so as to reduce the annual dues.

The Board of Censors reported that three certificates had been awarded, but the members being absent, the presentation would be deferred till the next meeting.

The subject for discussion was announced by the President, and voluntary papers solicited.

"ODONTALGIA, ITS PREVENTION AND TREATMENT."

Dr. Atkinson said: When I received my notice of the meeting, I observed on the notice that voluntary papers were requested. I have noted down a few facts containing the principles involved in the subject, and will read them.

The word Odontalgia is derived from the Greek for "tooth" and "pain"—that is, any form of sensation that is unpleasant, uneasy and distressing. The treatment of odontalgia, then, will consist in changing the currents. This may be accomplished by a simple treatment that secures the object of our desires—freedom from pain. Acceleration and retardation of the nutrient currents constitute the various expressions of pleasure and of pain. I shall not attempt to define what pain is, or what pleasure is, or pay any heed whatever to the principles upon which it depends.

I am aware that what I have here grouped together implies very much more than it expresses. The degrees of activity of a current

may be above or below the point of perception, and therefore neither painful nor pleasant, and yet be potent to change the nutrition of the nerve to a destructive degree, without our being conscious of it at the time. In all forms of pain an exhaustive system of hygienic currents will relieve us. The old cells must be removed and new ones deposited in their places in regular succession, to keep the machine in good working condition. The normal flow of nerve currents takes place unconsciously and involuntarily. Obstructions may take place in the nerve channels, thereby interfering with the regular flow of the current. All sensation is the result of some form of obstruction in the nerves of special sensation, whereby attention is called to the changed condition in the current. It is indispensable to health, that the regularity of the current should be maintained and secured. The essential prerequisite to this condition is a range of between ninety-five and one hundred degrees Fahrenheit, so that we have a range of from six to ten degrees within which to make our observations. Anything above or below this must necessarily tend to change the current, and thus we are limited to a very small range of temperature in which to arrive at the best results in preventing and curing. When a complete balance of all these currents has been made certain, we have effectually prevented all pain and secured a hygienic status of the whole body. Odontalgia results from some obstruction of the nerves of the teeth. One of the greatest hindrances in the way of treating odontalgia is the difficulty patients experience in definitely locating the pain. The treatment of odontalgia is not so simple as this statement might lead one to believe, for many cases of pain are practically odontalgia, so far as the actual nerve tissue is concerned, while the perception of pain is located at a distance from the tooth whose nerve is obstructed. I refer to cases of reflex action, where the pain is confined to the arm, hip, back or other locality, and which always subsides when the obstruction is removed from the nerve of the tooth on the side upon which the pain is located. True odontalgia, resulting from obstruction of the nerves of the pulp by reason of the deposition of pulp stones, obstructing the circulation of the pulp, is by far the most difficult to form a correct diagnosis. More examples of reflex odontalgia occur from this form of obstruction than from all the other forms put together. Sometimes these conditions result in decay of the pulp, and the operator may remain ignorant of the true nature of the case until a recurrence induces him to open into the nerve chamber. When periodontitis is present the diagnosis becomes more difficult, because we shall take it for granted that where periodontitis is well

marked we have dead pulp. The only difference of treatment that I would advise in this instance, consists in not carrying the knife over the point of the root. My reason for this is a desire to preserve the pulp alive as long as possible. I deem it of much more importance to remove obstructions than merely to treat the pulp, while the obstructing agent remains. Local treatment is to relieve the obstruction, while the constitutional treatment consists in a very great range of modes of application of the constitutional remedies. When you have complicated cases, they must be taken in their proper order. You had better cut ninety-nine times where it is not necessary, where there is a pulpless tooth, than to fail to cut once where it is. It is our lack of understanding of the anatomy and physiology of the location in which we operate, and we are not sufficiently in earnest to take hold in this matter, and reduce a complicated case to its elements, and go to work and carry it through.

Dr. W. H. Allen said the greatest difficulty he had was in the pain of the patient.

Dr. C. E. Latimer: I have not tried to enlarge the canal in a tooth, for the purpose of treating the root, for a dozen years. I cut up a good many teeth for the purpose of finding out the shape of the roots, and the size and shape of the canals. Some of them I have presented to the New York College. The result of my investigations was, that I thought I had better not try to enlarge the canals; that if I did, I should a great many times run through a canal and diverge from the canal, and do more harm than good, so that I gave it up. I want the canals just as the Lord made them. I think they are the best, as I can treat them through the canals that the Lord made better than those that I make. I can succeed better, I think, by using a soft rubber nozzle. Pressing that into the cavity, I can exhaust any gas that may be presented, and remove the pain. Then by withdrawing the piston of the syringe I can withdraw the gas. Then keep it open so that the gas can get out, using it in connection with the remedies that we all use. I prefer the use also of collodion, making a plaster upon the gum, which will give relief quite promptly. Keep the head high in sleeping, to prevent the blood from getting to the head; keeping the feet very warm and putting them in hot water, and instead of poulticing, keeping the head high, so as to keep the blood away from the head. I don't like the plan of cutting through the canals. Many cases of this kind come into our hands, giving a great deal of trouble, and we are greatly bothered to fill such canals where the instrument enlarging the canal has diverged. I have been so successful in exhausting the pus and gas, that I rarely use

the instrument for opening into the pulp cavity, and never for enlarging the canals.

Dr. Atkinson: When the tooth is so inflamed that the patient cannot bear to touch it, if you tie a strong cord around it, and then cut through the wall and drill right through, pull the string hard enough to relieve the pressure, and the patient is relieved at once.

Dr. W. H. Allen said that cutting through and drilling was not so difficult an operation as is generally supposed.

Dr. C. E. Latimer: I will repeat what I said many years ago, before the New York Society, in regard to the method of exhausting gas and pus from an old tooth: Take a little bit of rubber tube, slipping it over the nozzle of the syringe. This with a slight pressure can be adapted to the cavity, and then by practicing upon the piston the gas will be drawn out. It removes the pus and gas from an abscess as well. It relieves the pressure which causes the pain, and then just as soon as the pain is relieved, by reversing the operation you can pump medicine into the spot. I scarcely ever extract a tooth if the person wants to have it saved; probably I do not average one or two a month, and usually have to perform but one operation. As I pump the carbolic acid in I relieve the pressure and stop the pain. Usually, in a great many cases, in young persons especially, merely sucking upon the tooth by the patient will draw the gas and pus out. You can smell it at once, and that will give relief. I scarcely ever come across a case where it bothers me to any extent to pump medicines in or gases out.

Subject for June meeting, "Effects of Diseased Teeth upon the General System."

Next meeting at the residence of Dr. Wm. H. Allen, No. 18 West Eleventh Street.

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## DENTISTRY.

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By H. H. BURNETTE, St. John's, Newfoundland.

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Dental education, and what the practitioner owes society, seems to occupy the thoughts of some of the best men in our noble profession. Some cry out that we should be regularly qualified *medical doctors*, that our colleges do not answer the purpose, and that they do not make men what they should in point of excellence. There is a great deal of common sense, and a great deal of nonsense, too, in the different arguments set forth in the premises—that is, according to my opinion. My opinion is this—viz., if we are practicing a branch of the medical profession

proper, our qualifications should be as much medical as the aurist's or oculist's. They do not practice general medicine; theirs is a specialty; but a knowledge of general medicine and surgery is considered necessary, and the consequence of this is, they are recognized as belonging to the medical profession. Their standing in society is better than our dental colleges can give us. If we call ourselves mechanics (and two-thirds of our professional work is truly mechanical), then why call ourselves, *à la* Harvard, "Dental Medical Doctors"? All this looks to me very much like a boy with his first high hat, trying to make others think he is a man, when he knows himself very well that he is not. This does not prove we are very sure of our position. I am very confident if the *laity* read our dental journals they can't help discovering that the dentist is claiming to be what he knows full well he is not. I have known college graduates—yes, *actually college graduates*—who could not write a prescription for even a *mouth wash* or a *sleeping draught*; at the same time they would be up in arms in a minute if you put them down a step lower in professional intelligence and education than the regular medical doctor. Now a knowledge of medicine in dentistry increases a practitioner's influence greatly. We must all admit this. Can four months' or *one year's* instructions qualify a man to take the great responsibility on his own shoulders of administering anæsthetics? That four months is the usual time spent in college, we all know, "including five years' practice and pupilage." Now what does pupilage amount to spent with the majority of learned (?) preceptors? Nothing. The time is spent generally half asleep beside a dental chair, striking a plugger, or in the work-room polishing rubber plates. Now if five years of this very instructive (?) sort of employment, followed by four months of college instructions, makes a man equal to an American M. D., I've nothing more to say, further than to reiterate what I have said above—viz., I don't believe it does. I have too much respect for American medical colleges. Dentists will never be considered by medical doctors or the people as their equals until they are possessed of a *bona fide* medical qualification. I don't say this qualification is necessary for the professional success of a dentist; I know it is not. At the same time, it would not be much of an *inconvenience*. But until dentistry is elevated to this standard it is nonsense to claim the same degree of professional recognition as the M. D. I don't think there is a gentleman practicing dentistry who will disagree with me in these opinions.

*Omnia vincit labor*, and labor in the right direction is what we want. We don't want to pull medicine down to us—vain attempt!—but we want to rise to its standard, and we will, *per gradus*.

## THE DISCOVERY OF ANÆSTHESIA.

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By J. MARION SIMS, M.D.

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[From *Virginia Medical Monthly*.]

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Long before the days of Horace Wells and of Morton and Jackson, we were on the eve of the discovery of anæsthesia. In 1790, Priestley discovered nitrous oxide gas. In 1799, Sir Humphrey Davy experimented with it, and in 1800 he published his *Researches, Chemical and Philosophical, chiefly concerning Nitrous Oxide Gas and its Respiration*, in which he says, "As nitrous oxide, in its extensive operations, appears capable of destroying physical pain, *it may probably be used with advantage during surgical operations* in which no great effusion of blood takes place." Sir Humphrey Davy had inhaled the gas repeatedly for headache and other painful affections, and finding relief for the time, he suggested its use as an anæsthetic in surgery; and if he had been a surgeon, there is no doubt he would have used it as such. But his great idea was lost to the world for more than forty years.

There are four claimants for the honor of the discovery of anæsthesia, viz.: Crawford W. Long, of Athens, Georgia; Horace Wells, of Hartford, Ct.; W. T. G. Morton and Charles T. Jackson, of Boston.

I propose to give a plain statement of facts bearing on the question, leaving the reader to draw his own conclusions.

The claims of Long have never been fairly stated in connection with those who came after him. I am ashamed to say I was wholly ignorant of them until a very recent day, and I believe that the great mass of the profession are in the same category with me. I became acquainted with the facts of Long's labors by mere accident.

In October, 1876, Dr. P. A. Wilhite, of Anderson, S. C., came to New York to consult me about the health of his daughter. Her case required a surgical operation, and it was necessary for her to take ether, which was given by Dr. Harry Sims. After the operation was over, and while we were waiting to see our patient fully restored from the effects of the anæsthetic, the conversation naturally turned upon the wonders of anæsthesia, when Dr. Wilhite said, "Doctor, I assisted at the first operation ever performed under the influence of ether." I said, "But how could this be, when you have never been in Boston, and the first operation ever performed under ether was by Warren, of Boston, in

October, 1846, or, as some claim, by Marcy, of Hartford, in January, 1845?" Dr. Wilhite then told me that he had assisted Dr. Crawford W. Long, of Georgia, in extirpating a tumor from the neck of Mr. Venable, in March, 1842, while he was completely anæsthetized by the inhalation of sulphuric ether—that Mr. Venable was as profoundly anæsthetized as the patient then lying before us—and he also said that he had assisted Dr. Long to operate on other patients under the influence of ether in 1843 and '44, while he was a student of medicine in Dr. Long's office. He declared that Long was the real and original discoverer of anæsthesia, and he believed he would be so acknowledged if all the facts in the case were fully set forth.

He further said that he presumed that he (Dr. Wilhite) was the first person who had ever profoundly etherized any one—and it was under these circumstances. Dr. Wilhite says that from the time he was ten years old (1832), he was familiar with the use of ether by inhalation as an excitant; that the boys and girls in his neighborhood near Athens, Georgia, were in the constant habit of using it; that there was hardly ever a gathering of young people that did not wind up with an ether frolic. Old-fashioned "quiltings" were very common in his day and time, and in the evening the boys and young men would go to these for the purpose of a dance or an ether frolic.

On one occasion, he met several young people at Mr. Ware's, about five miles west of Athens, at a quilting. The girls and boys all finished the evening by inhaling ether. Some would laugh, some cry, some fight and some dance, just as when nitrous oxide gas is inhaled. It was in the fall of 1839. Wilhite was a romping boy of seventeen. All the boys and all the girls had inhaled the ether, some of them more than once. They were looking around for new subjects for it, when Wilhite saw a negro boy at the door, who seemed to be enjoying the sport. Wilhite invited him to come in and try the ether. He refused. Other young men then insisted on his taking it. He refused again in a most positive manner; whereupon some of the thoughtless young men caught hold of the boy, and called Wilhite to give him the ether. He struggled violently, but they threw him down and held him there while Wilhite poured out some ether on a handkerchief, and pressed it firmly over his mouth and nose. He fought furiously. They persisted, thinking it was great fun. After a long struggle, the boy became quiet and unresisting. The young men then let him alone. They were greatly surprised that he did not get up immediately and say or do some foolish thing for them to laugh at. He lay quietly, and with stertorous breath-

ing. They tried to arouse him, but could not. They then became greatly alarmed, and sent one of their number on horseback for Dr. Sydney Reese, at Athens, five miles distant. The messenger rode with all possible speed. He fortunately found Dr. Reese at home, who lost no time in going to Mr. Ware's. On his arrival he found the negro lying on his back still soundly asleep. The young ladies had left the frightful scene. Young Wilhite, and his principal accomplice, thinking that they had in mere play murdered a fellow-being, were so much alarmed, that they contemplated making their escape from the country ; but the timely arrival of Dr. Reese soon restored their courage. Dr. Reese heard the history of the transaction. He then threw water in the face of the sleeping negro, slapped him, raised him up, shook him violently, and after a little he was roused to consciousness, greatly to the relief of all present. The doctor then gave the youngsters a lecture on the danger of such follies, and cautioned them against a repetition of their heedless act. This of course broke up the ether frolics in this neighborhood. Dr. Wilhite thinks it was more than an hour from the time the messenger started for Dr. Reese, till he returned with him to Mr. Ware's. The distance to Athens and back was ten miles, and all this time the negro boy was profoundly narcotized.

This is unquestionably the first case in which sulphuric ether was ever given to the extent of producing complete anæsthesia.

Dr. Crawford W. Long, now of Athens, Georgia, was born in Danielsville, Madison county, Georgia, on the 1st November, 1815. He graduated at the University of Georgia (then the Franklin College) in 1835. He studied medicine and graduated at the Medical Department of the University of Pennsylvania in 1839. He then went to Jefferson, Jackson county, Georgia, where he practiced medicine for many years. In 1842 he had four students in his office, viz.: P. A. Wilhite, John S. Groves, D. I. Long and H. R. P. Long. The two last were relatives of Dr. Long, and they are both dead. Wilhite and Groves are still living (1877). Dr. Long was 27 years old. His pupils were all from 19 to 21; they were on the best of terms with each other, the doctor entering into all the sports of his pupils with a hearty good will, while he never neglected his duties as their teacher. On one occasion they were talking about the inhalation of nitrous oxide gas, when one of his pupils asked him to make some for them. He said he did not have suitable apparatus for it, but that the inhalation of sulphuric ether would produce precisely the same exhilarating effect. One of the young men present said he had inhaled ether while at school, and was willing to do it again.

They were all anxious to witness its effects. Dr. Long got some ether immediately, and gave it to the young man who had previously inhaled it. He then inhaled it himself, and afterwards gave it to all present. After this the young doctor and his pupils indulged occasionally in ether frolics. On several occasions Dr. Long became furiously excited and could not be controlled. On recovering from the ether intoxication, he frequently noticed that his arms and hands were badly bruised, and yet he was not conscious of having felt any pain at the time he was under the influence of the ether. He also noticed the same thing in his pupils. They were often badly hurt by falls and blows, and were not conscious of pain at the time. These facts, repeatedly observed, suggested to his mind the idea of using ether to prevent the pain of surgical operations. He frequently spoke of this to his students, and at last he determined to give it a trial. Wilhite encouraged him by relating the case of the negro boy he had playfully and unintentionally put under the influence of ether for an hour or more in the fall of 1839.

Dr. Long having made up his mind to try the experiment with ether on the first favorable opportunity, says (*Southern Medical and Surgical Journal*, Dec., 1849):

“The first patient to whom I administered ether in a surgical operation, was Mr. James M. Venable, who then resided within two miles of Jefferson. Mr. Venable consulted me on several occasions with regard to the propriety of removing two small tumors situated on the back part of his neck, but would postpone from time to time having the operations performed, from dread of pain. At length I mentioned to him the fact of my receiving bruises while under the influence of the vapor of ether, without suffering, and, as I knew him to be fond of, and accustomed to inhale ether, I suggested to him the probability that the operations might be performed without pain, and proposed operating on him while under its influence. He consented to have one tumor removed, and the operation was performed the same day. The ether was given to Mr. Venable on a towel; and when fully under its influence I extirpated the tumor. It was encysted, and about half an inch in diameter. The patient continued to inhale ether during the time of the operation, and when informed it was over, seemed incredulous till the tumor was shown him. He gave no evidence of suffering during the operation, and assured me, after it was over, that he did not experience the slightest degree of pain from its performance.”

*This operation was performed on the 30th of March, 1842.*

“The second operation I performed upon a patient etherized was on the 6th June, 1842, and was on the same person (Mr. Venable) for the removal of another small tumor. This operation required more time than the first, from the cyst of the tumor having formed adhesions to the

surrounding parts. The patient was insensible to pain during the operation, until the last attachment of the cyst was separated, when he exhibited signs of slight suffering, but asserted after the operation was over that the sensation of pain was so slight as scarcely to be perceived. In this operation, the inhalation of ether ceased before the first incision was made."

In a certificate sworn to by James M. Venable on the 23d July, 1849, he says: "In the early part of the year (1842), the young men of Jefferson and the country adjoining were in the habit of inhaling ether for its exhilarating powers, and I inhaled it myself frequently for that purpose, and was very fond of its use. While attending the Academy, I was frequently in the office of Dr. C. W. Long, and having two tumors on the side and rather back of my neck, I several times spoke to him about the propriety of cutting them out, but postponed the operation from time to time. On one occasion we had some conversation about the probability that the tumors might be cut out while I was under the influence of sulphuric ether, without my experiencing pain, and he proposed operating on me while under its influence. I agreed to have one tumor cut out, and had the operation performed that evening (afternoon) after school was dismissed. This was in the early part of the spring of 1842. I commenced inhaling the ether before the operation was commenced and continued it until the operation was over. I did not feel the slightest pain from the operation, and could not believe the tumor was removed until it was shown to me. A month or two after this time Dr. C. W. Long cut out the other tumor, situated on the same side of my neck. In this operation I did not feel the least pain until the last cut was made, when I felt a little pain. In this operation I stopped inhaling the ether before the operation was finished. I inhaled the ether in both instances from a towel, which was the common method of taking it."

Dr. Long's four students, Wilhite, Groves and the two Longs, also E. S. Rawls (now Dr. Rawls) and Andrew J. Thurmond, were present, and assisted at the operation. Dr. Wilhite tells me that the etherization of Venable was as complete as it is ever made nowadays, and that Venable always declared he felt no pain during the operation.

On the 3d July, 1842, Dr. Long amputated the toe of a negro boy, Jack, belonging to Mrs. Hemphill. Jack felt no pain, having been completely anæsthetized.

On the 9th of September, 1843, Dr. Long exsected, without pain, three small cystic tumors from the head of Mrs. Mary Vincent, who was etherized for the purpose.

On the 8th January, 1845, Dr. Long amputated two fingers for a

negro boy belonging to Mr. Ralph Bailey, Sr., the patient being fully etherized and feeling no pain whatever.

Morton's friends have been from the outset clamorous and persistent in proclaiming to the world "that Morton was the first man who ever produced complete anæsthesia for surgical operations." The facts above stated prove incontestably that they were mistaken; and before we get through it will be shown that they were doubly mistaken; for it will be established beyond controversy that Wells produced anæsthesia by nitrous oxide gas long before Morton did it with ether.

Long's anæsthesia with sulphuric ether was on the 30th March, 1842.

Well's anæsthesia with nitrous oxide gas was on the 11th December, 1844.

Morton's anæsthesia with sulphuric ether was on the 30th September, 1846.

Thus we see that Long antedates Wells two years and eight months, and antedates Morton four years and six months.

Dr. Long's operations under the influence of ether were known by all his neighbors—professional and non-professional. Many of these are still living. Dr. Wilhite lives at Anderson, South Carolina. Dr. John S. Groves, his fellow-student with Long in 1842, is now living at Dalton, Georgia. Dr. A. Delaperiere was the only physician, besides Dr. Long, at Jefferson in 1842. He witnessed these operations; has given his testimony to that effect, and is still living. Dr. E. S. Rawls, another witness, was living in Alabama a short time ago. All these men testify to the fact that Long's operations under ether were witnessed and known by all medical men in his neighborhood and by the whole community.

Long's operations were not secret. He made no mystery about the substance given to prevent pain. He took out no patent for his discovery, as did Morton and Jackson. He did not attempt to convert it into a money speculation. He published it before all men. It was not hidden from the world.

True, his was a very contracted world. He was waiting to test his great discovery in some capital operation. He lived in an obscure little town where there were no railroads and no ponderous machinery to maim his fellow-men, and the amputation of a leg or arm was an era in the life of a country doctor.

While he was still waiting for larger operations before communicating his discovery to some scientific journal, the labors of Wells and Morton and Jackson and Simpson burst upon the world. When Jackson made his visit to Long at Athens, in March, 1854, he said to Long:

"You have the advantage of priority in date and in the first use of ether as an anæsthetic; but we have the advantage of priority of publication."

Now upon this point Long, Wells, Morton and Jackson stand individually upon the same level. Long exhibited to medical men and to the community his operations under ether (1842). Wells exhibited to medical men and to the community his operation of the extraction of teeth under the influence of nitrous oxide gas (1844). Morton exhibited to medical men and to the community the use of his secret remedy, "Letheon," 1846, as an anæsthetic. But Morton was fortunate in showing his patent remedy to the great surgeons of Boston. And it was not Morton, but it was Warren and Hayward and Bigelow who performed the operations at the Massachusetts General Hospital (October, 1846,) on patients to whom Morton gave his "Letheon," that the world owes the immediate and universal use of anæsthesia in surgery. If Morton could have had his way, he would have deodorized the ether and kept it a secret from the world.

Neither Wells nor Morton nor Jackson ever published a word on the subject till it burst forth in a blaze from the labors of the hospital surgeons already named.

When Warren and Hayward and Bigelow proved the real greatness of the discovery, then it was that Wells, Morton and Jackson began the war of pamphlets, and not till then did either of them publish in any scientific journal a line about anæsthesia. And thus we see that its first publication to the world was really due to the illustrious surgeons of the Massachusetts General Hospital.

In 1853 Morton petitioned Congress to grant him a large sum of money for the discovery of anæsthesia. The friends of Wells opposed it, and claimed this honor for Wells, who used nitrous oxide gas as an anæsthetic two years and a half before Morton used ether for this purpose.

Then it was that the friends of Long appeared upon the scene, proving that Long was the first to use ether, antedating Morton four years and a half.

When Long's claim to the honor of discovering anæsthesia was presented to Congress by the Hon. Mr. Dawson, Senator from Georgia, it was formidable enough to block the movements of Morton to get the appropriation he demanded for his discovery. They were so strong that Dr. Charles T. Jackson went to Athens, Georgia, expressly to see Dr. Long on the subject. In a communication to the Boston *Medical and Surgical Journal*, April 11th, 1861, Dr. Charles T. Jackson says he visited Dr. Long at Athens, Georgia, on March 8th, 1854, to examine into Dr. Long's claims

to being the first to use sulphuric ether as an anæsthetic in surgery, and he further says: "From the documents shown me by Dr. Long, it appears that he employed sulphuric ether as an anæsthetic agent—

"*First.* On March 30th, 1842, when he extirpated a small glandular tumor from the neck of James M. Venable, a boy, [Mr. Venable was over 21 years old when the operation was performed.—J. M. S.] in Jefferson, Georgia, now dead.

"*Second.* On July 3d, 1842, in the amputation of the toe of a negro boy belonging to Mrs. Hemphill, of Jackson, Georgia.

"*Third.* On September 9th, 1843, in the extirpation of a tumor from the head of Mary Vincent, of Jackson, Georgia.

"*Fourth.* On January 8th, 1845, in the amputation of a finger of a negro boy belonging to Ralph Bailey, of Jackson, Georgia.

"Copies of the letters and depositions proving these operations with ether were all shown me by Dr. Long.

"He also referred me to physicians in Jefferson who knew of the operations at the time."

The above extract from Dr. Jackson's paper to the *Boston Medical Journal* recognizes Long's claim to being the first to produce anæsthesia for surgical operations, but it does not tell the whole story of Dr. Jackson's visit to Dr. Long.

Dr. Long has furnished me with all the evidence, consisting of affidavits, certificates, book entries, etc., that Dr. Jackson examined. He has also written me fully on the subject, and every fact that I have stated can be substantiated by documentary evidence.

In one of Dr. Long's letters to me (Nov. 5, 1876), he says:

"In 1854 Dr. Charles T. Jackson came to Georgia and spent two days with me in Athens, most of the time in my office, examining books, accounts, dates and certificates establishing the time, etc., of my operation. He expressed himself satisfied with the correctness of my claim to the first use of ether as an anæsthetic in surgical operations. Dr. Jackson informed me that he would go from Athens to Dahlonga, Ga., and as I knew he must pass through Jefferson, where I resided up to 1850, and where my first operations under ether were performed, I requested him to stop in Jefferson and see some of the physicians there who witnessed or knew of the operations, and also a number of the citizens of the village who either witnessed the operations or were familiar with them from common report. Dr. Jackson spent one or more days in Jefferson, and on his return expressed himself satisfied with the testimony."

"In Dr. Jackson's communication to the *Boston Medical and Surgical*

*Journal* (April 11th, 1861), he neglected to say anything of the information he obtained while in Jefferson, although he admitted to me on his return that the evidence was perfectly satisfactory."

The Hon. C. W. Andrews, of Madison, Georgia, informs me that he was in Dr. Long's employ and in his office when Dr. Jackson spent a whole day with Long in comparing notes and talking over the subject of etherization, and it seems that the real object of Dr. Jackson's visit to Dr. Long was to induce Long to unite with him in laying their conjoint claims before Congress as the real discoverers of anæsthesia as opposed to those of Morton. Jackson was willing to concede to Long the honor of being the first to use ether in surgical operations, but wished Long to concede to him the honor of priority in making the discovery of the principle of anæsthesia, when he inhaled ether to relieve the pain and difficulty of breathing after inhaling chlorine gas (as Sir Humphrey Davy had done before).

Dr. Long says (February 8th, 1877): "In our conversation I understood Dr. Jackson to yield the point of priority to me—and so did the Hon. C. W. Andrews. I did not admit to him that he was the first to make the discovery—leaving to me its practical application; and when he proposed to me to unite our claims—he to claim the discovery and I its first practical use in surgical operations—I positively refused. I was satisfied that I was entitled to the credit of the discovery, as well as of the first practical use of ether in surgical operations."

"Instead of writing to Senator Dawson to unite our claims, as Dr. Jackson requested, I wrote to Mr. Dawson to make no such compromise, but to place my claims solely on their merits; and if you will consult the Congressional proceedings of that time, you will see that Mr. Dawson presented my claims separate and independent."

*(To be continued.)*

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NEW USE FOR GLYCERINE.—Physicians and Dentists who use small mirrors to explore the throat and teeth, astronomers employing large mirrors out of doors, all who have occasion to use spy-glasses in foggy weather, and especially those near-sighted persons who cannot shave themselves without bringing their noses almost in contact with the looking glass, are doubtless aware that the lustre of mirrors becomes soon dimmed by the breath, by dew, and generally by water in a vaporous state. The way to prevent this troublesome fog is simply to wipe the surface of the mirror, before using, with a rag moistened with glycerine. By this substance the watery vapor is completely taken up.—*Scientific American*.

## ROYAL COLLEGE OF DENTAL SURGEONS—CLASS LEGISLATION AND ITS RESULTS.

The evil results following Legislature acts conferring exclusive powers on corporations was never made more conspicuous than in the *Globe's* exposition of the Normal School examination system, a few years ago, by which unique process Normal School students were trained in specialties and "catch questions," arranged for examination, which none but students of this favored institution could answer. As an instance of a precisely similar nature occurred at Toronto last week, we think it only our duty to unearth another large Ethiopian, which generally has an abiding place in some clause of all acts of this nature.

The Royal College of Dental Surgeons is an institution of a commendable character, as originally intended. Its object is to fit students for the practice of dentistry, and give them that status which entitles them to be known as members of a profession. The act conferring the honored privilege was passed in 1867, and amended twice since that time. For several years after its passage the Royal College existed only in name, its principal service being only to confer a Certificate of Licentiate of Dental Surgery, on those considered qualified. Latterly a college has been organized on a small scale, and is doing a good service in elevating the standard of the profession. The members of this Royal College Board meet on the second Tuesday of March and examine all applicants for a degree. Accordingly, last week, twenty-three candidates presented themselves for examination, and eleven of the number were plucked, two of them from this town.

An inquiry into the matter has revealed the following facts:—One-half of the examiners are connected with this College and the Board recognizes no diplomas from other colleges, and the questions are dictated by the "professors," who are not slow to propound such as arise from the lectures given by them, from which the students take notes. The consequence is, that the applicant, no matter what his qualifications are, is met with what the President and Head Professor calls questions of the "collateral branches" and what the students call "catch questions," which not even one physician in fifty could answer. We present a few of them to throw light on the subject:—

Q.—Explain the term quantivalents, acidulous, radical, reagent, hydrate and anti-hydrate.

Q.—Describe the manufacture of ammonia nitrate, give an equation

showing the reaction, and state *how many pounds of nitrous oxide gas will be formed by the decomposition of 50 pounds of nitrate of ammonia.*

Q.—Name the elements of the third class of proximate principles and some of the properties peculiar to them.

Q.—Ranula; describe it, give its diagnosis and treatment.

Q.—Mention the cause of a hemorrhagic diathesis.

Q.—Describe the internal surface of the occipital bone.

These are what the chief professor calls important “collateral” questions, as if, to become proficient in a profession manipulative in character and confined to the front part of the face, it is necessary to describe the internal surface of a bone situated at the back of the head, which dentists are not very often called upon to treat, although there may be craniums so shallow that the roots of molars might be found in contact with the crucial ridge of the “occipital.” These learned examiners do not ask the candidate how or in what manner nitrous oxide (laughing gas) acts upon the nervous centres, on the blood, or affects the action of the heart; what the dentist would do in a case of suspended respiration; how to detect nitric oxide (poisonous gas), all points of practical necessity with a good operator; but they find it necessary to know how *many feet of gas* can be manufactured from a given quantity of ammonia.

What is the result of such questions? We will tell you. The practical ruling out of such dentists as do not attend the lectures, given by two or three members of the Examining Board, questions got up to be answered by the students of the “Royal College of Surgeons,” who, as we have before mentioned, thus know the particular points on which they will be questioned, and thus show to the world the superiority of that college over all others, notwithstanding the President-professor found it convenient, since the formation of this Board, to attend an American College and secure an American diploma. As a proof, we will instance two young men from this town. One of them articed himself to one of our leading dentists, and served a two years’ apprenticeship, as required by law. He then attended a Philadelphia College two sessions and secured his diploma; after which he acted as assistant for a year to secure the practice so necessary even after graduating, before launching out for himself. The other served his two years’ apprenticeship at Toronto, with a dentist who *was*, if not now, a professor of this Canadian College. Two years more were spent with a dentist across the line, during one year of which he devoted considerable time to the study of medicine. After which he secured a diploma of a Philadelphia College, and a

certificate from the Philadelphia School of Anatomy. He then returned to Buffalo and became the associate dentist of a Buffalo operator, whose patrons include such families as Col. Czowski and Prof. Goldwin Smith, of Toronto.

With such qualifications did our two young men deposit their \$40, and appear before the august Board, which, by the present act, empowers it to say, in substance:—

“Gentlemen, we recognize no diplomas nor qualifications; we do not require you to perform clinical operations to demonstrate your ability in the art preservative; you must answer 70 per cent. of these questions, and furnish proof that you are British subjects by birth or naturalization, or you must refrain from practicing on Canadian soil until such time as you can fill these requirements, or be liable to a fine not exceeding \$20, when any person chooses to complain of you, should you practice your art for pay in the mean time.”

Four young men, thus qualified, are now required to await the convening of this Board, a year hence, or be liable to a fine at any moment, and yet the members of this Examining Board have gained what knowledge they have of the science of dentistry from American text-books, and have scarcely an instrument in their office which is not made by American manufacturers.

The members of the Board have time and again invited American dentists to visit the annual meetings, for the purpose of imparting the information which they possessed upon dental subjects—a knowledge which has given the graduates of American Colleges the passport into the houses of every Royal household in Europe, and is so much prized, that students from Russia, Prussia, England, France, Italy and South America can always be found in American Dental Colleges. They have even *paid* American dentists to attend these annual meetings; that they might derive profit from their essays and remarks; and now that they have got a college of their own, they even refuse to recognize the merits of the best American dentist in the land, until he has passed an examination in which he must answer questions which, we will venture to assert, the examiners themselves could not answer a week before the examination commenced.

We may be accused of not knowing whereof we speak; but we can assure these gentlemen, who are abusing the powers conferred upon them, that the writer has also been a member of an Examining Board, but was not interested in personel gain or the pecuniary interests of a College. He was also, until a few months since, a member of the American Den-

tal Association, of the New York State Dental Society, and is now an Honorable Member of the Canadian Dental Society, a distinction which was conferred by the assistance of the same gentlemen who are now endeavoring to enforce a piece of legislation so utterly repugnant to anything in the shape of liberality, that even those who created it must now look upon it with amazement, as is the case with nine-tenths of the dental profession in the Province at this moment.

We trust that our legislators will see the propriety of repealing such portions of the Act as allow the professors of the "Royal College of Dental Surgeons" to act as examiners of the qualifications of dentists who apply for certificates of Licentiates of Dental Surgery.

*[From Evening Recorder, of Brockville, Ontario.]*

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## CHARLATANS AND QUACKS.

By D. D. S., New York.

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In no city in this country do I believe there are so many quacks as in our own. Everywhere the eye meets the gilded signs and show-cases announcing that Dr. So-and-so is prepared to perform all operations pertaining to dentistry. Men who have had no education or experience, except it may have been in an office of a friend, who has shown them how to put up a rubber set and plaster in an amalgam filling. He then buys a show-case and fills it with old specimens (not one of which he probably made himself), and a lot of tin and gilder's foil, hangs up his sign, gets his circulars printed, which proclaim him as Dr. —, who is prepared to perform all operations in dentistry in the most artistic and workmanlike style. It is an outrageous shame that they should be allowed to practice. They not only injure their fellow-beings, but they draw from and cast a stigma on decent, legitimate dental surgeons, who have spent years of toil in becoming proficient in their specialty. There certainly ought to be a law passed compelling every one who wants to practice dentistry to pass an examination before some board. Other professions have them, and why can't we? Other States have them, and why can't we? I was in one of our dental depots the other day, and saw a man at the tooth counter whom I recognized as a barber whom I had patronized, but who now was a dentist. He has shaved me up to about a year and a half ago, and with a few weeks' experience set up an office and went to work. After getting the young man at the counter to

select the teeth, he asked him to place them on the cast in their proper places, and he did not know the right tooth from the left. He announces himself as a dental surgeon and administers gas!

I know of another case: A dentist on the East side told a friend of mine that the Infirmary of the New York College of Dentistry drew away about three hundred dollars' worth of extracting a year. "I don't profess to do any filling," says he; "but extract and put in false ones." Nothing but a slaughter-house his office must be, for he has made a fortune. He holds a diploma—but how he got it the Lord only knows! I don't mean, Mr. Editor, that a man must necessarily be a graduate to be a good dentist; but I do say that a man should have been educated for his profession, served his time with a good dentist, or attended college. If a law was in force making it necessary to hold a certificate stating that he was qualified to practice, it would be a blessing to the community, at home and at large, and then he would certainly know the right tooth from the left.

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## THE POPULATION OF THE EARTH AND THE PROGRESS OF HYGIENE.

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The most trustworthy estimate of the number of people in the world for the year 1876, as furnished by statisticians, is 1,423,917,000. This is an increase of over twenty-seven millions on the estimate of 1875, but the augmentation is not due entirely to the excess of births over deaths, but largely to the obtaining of more accurate information regarding the population of regions hitherto little known, and to more perfect census returns from all countries.

Asia is still the home of the majority of the human race. About four-sevenths of the earth's population, or 825,548,590, is Asiatic. Europe comes next with over a fifth, or 309,178,300; Africa with about a seventh, or 199,921,600; America with less than a sixteenth, or 85,519,800; and finally Australia and Polynesia, with the very small fraction of 4,748,600 people. Europe is the most densely populated, having 82 persons to the square mile; Asia, 48 to the square mile; Africa,  $17\frac{1}{2}$ , and America and Australia,  $5\frac{1}{2}$  and  $1\frac{1}{3}$  respectively.

There are 215 cities with populations of over 100,000; 29 of half a million or more, and nine containing a million or more inhabitants, each. Of these last, four are in China. New York—including Brooklyn, as

we may rightfully do for purposes of comparison—and the greatest cities of the world stand in this order: London, 3,489,428; Paris, 1,851,792; New York, 1,535,622; Vienna, 1,091,999; Berlin, 1,044,000; Canton and three other Chinese cities, one million each. New York being third in the list of great cities, without counting our New Jersey overflow.

Though there are not at hand statistics upon which to base an accurate statement of the fact, yet it is the general conclusion of all observers that the average longevity of the human race has largely increased within a hundred years. The reported death-rates everywhere support this conclusion; and it is thoroughly proved that the devastations of epidemics are nothing like so great now as formerly. Medical science, in its preventive aspect especially, shows a steady advance in its ability to discover, prevent and check diseases which in past ages devastated large communities. In London, for example, two centuries ago the mortality was 50 per one 1,000 and the average duration of life was only 20 years. The death-rate, 1660–79, 80; 1681–90, 42.1; 1746–55, 35.5; 1846–55, 24.9; 1871, about as at present, 22.6, and the mean duration of life is now 42 years. The same holds good throughout England. There and elsewhere in Europe, as also in this country, the subject of public hygiene has received great attention of recent years, and its difficulties are being steadily overcome. Men unquestionably live longer now than their ancestors lived, and have better average health, and that our descendants will gain on us in these respects there is but little reason to doubt.

As to great cities, New York is easily third in population, but behind all England, and English cities, many other European and most of other American cities, in health and average longevity. If it took in all its children, it would press hard on Paris for the second place in population, and before the next century is reached, or before it has advanced far, will probably know no superior in population except marvelous London.—*The Sanitarian*.

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#### BOOK NOTICE.

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A PRACTICAL TREATISE ON OPERATIVE DENTISTRY. By PROF. J. TAFT. Third edition, with 128 illustrations. Cloth, \$4.25; leather, \$4.75. Philadelphia: Lindsay & Blakiston.

This edition has been thoroughly revised by the author, aided by liberal expenditures on the part of his publishers. We now merely note its issue from press, and in a future number, and after a more careful examination, shall have something more to say of it.

## NOTES.

### Connecticut Valley Dental Society.

The semi-annual meeting of the Connecticut Valley Dental Society for 1877 will be held at the Mansion House, Greenfield, Mass., on Tuesday and Wednesday, June 12th and 13th, commencing on Tuesday at 10 A. M.

OFFICERS OF THE SOCIETY.—J. F. Adams, Worcester, Mass., President; L. Noble, Springfield, Mass., 1st Vice-President; L. C. Taylor, Hartford, Conn., 2d Vice-President; C. T. Stockwell, Springfield, Mass., Secretary; Newton Morgan, Springfield, Mass., Treasurer; C. A. Brackett, Newport, R. I., J. S. Hurlbut, Springfield, Mass., J. J. Anderson,\* Springfield, Mass., Executive Committee.

ORDER OF PROCEEDINGS.—First day: Call to order by the presiding officer. Secretary's report of the last meeting. Appointment of a committee on membership. Reports of committees. Election of new members. Election of a member of the executive committee in place of the late Dr. J. J. Anderson. Miscellaneous business. Reading of papers, and discussions.

Second day: Call to order by the presiding officer. Election of new members. Reports of committees. Miscellaneous business. Reading of papers, and discussions.

SUBJECTS AND ESSAYISTS.—1. Mechanical dentistry, Dr. C. C. Haskell, Greenfield, Mass. 2. Dental education and the obligations of the practitioner to his student, Dr. C. Johnson, Thompsonville, Conn. 3. Incidents of practice, special operations, etc., Dr. D. H. Smith, Holyoke, Mass. 4. What have the public a right to expect from the dental practitioner? Dr. J. J. Vincent, Amherst, Mass. 5. Filling teeth, and preparations of gold for filling, Dr. L. C. Taylor, Hartford,

Conn. 6. Dental appliances, pet instruments, clinic with non-cohesive foil, etc., Dr. L. D. Shepard, Boston, Mass. (and others). 7. Plastic fillings, Dr. C. L. Anderson, Springfield, Mass. 8. Miscellaneous subjects.

The executive committee propose that the time from 8 to 10 A. M. on Wednesday be set apart for the special consideration of the 6th subject on the programme. It is the intention to provide two or more chairs, at which several operations may be in progress at the same time, if desired, affording an opportunity for different members to illustrate their own methods of performing some simple operation, such as applying the rubber dam, introducing a temporary filling, etc.

Prof. L. D. Shepard, of Boston, will give a clinic illustrating the making and use of Cylinders of Non-cohesive Foil, put in by hand pressure and automatic mallet.

The exhibition of new appliances and pet instruments will also be in order at this time. Accommodations at the Mansion House may be had for \$2.50 per day.

An excursion to the "tunnel" after adjournment has been suggested, and will be submitted to the Convention.

Members of the profession generally are cordially invited to be present.

C. T. STOCKWELL, *Secretary.*  
*Springfield, Mass., April 20, 1877.*

### Southern Dental Association.

In accordance with a resolution passed at the last annual meeting of "The Southern Dental Association," held at Montgomery, Ala., requesting the presiding officer to call a special session, I hereby notify all members of the above-mentioned Society that there will be a special session held at Deer Park, Md., commencing Tuesday, August 14th, 1877, for the purpose of participating in a joint meeting of The

\*Deceased.

American Dental Convention, Maryland, and District of Columbia Association. Drs. R. Finley Hunt of Washington, R. B. Winder, of Baltimore, and J. R. Walker, of New Orleans, having been appointed a Committee of Arrangements for this special session, it is to be hoped that they will leave nothing undone that will add to the interest of the meeting.

S. J. COBB, *Pres.*

E. S. CHISHOLM, *Rec. Sec.*

DR. SAMUEL MALLET, a well-known citizen of New Haven, died Saturday afternoon. We take the following from the lengthy obituary notice of him, published in this morning's *Courier*:

"He was born in Redding, Ct., Sept. 9th, 1816. At the age of twenty he removed to Bridgeport, where, in 1840, he married Elizabeth A. Turney, a lady of peculiarly amiable character, with whom he lived in uninterrupted happiness until her lamented death, some four years ago. In 1847 he removed to this city, and resided here the remainder of his life. He gained a high position here as a dentist, and followed the profession until his failing health compelled him to relinquish it.

"He united with the Methodist Episcopal church when a young man, and in the progress of his membership of upwards of forty years, he held various official positions in it. Connected with the first church here, he was at different times class-leader, steward, trustee, Sabbath school superintendent and local preacher, though his health seldom allowed him to exercise the privileges of the latter office. He was a liberal supporter of all church and benevolent enterprises."

The *Courier* says the deceased never spoke unkindly of any one, and that he was always a peacemaker, trying to harmonize discords and heal breaches of friendship. His death was hastened by that of

his wife, the seeds of disease carried for many years by him developing rapidly from that period and causing his decease. [*Bridgeport Standard, April 23, 1877.*]

#### Surgeon's Knot.

Having placed your ligature under and across the artery, take a free end in each hand; keep the end in the right hand in front of the end in the left hand in crossing the string, so as to make it pass across, around and up under the end in the left hand; it will still be in front of the other free end, although it has changed hands; keep it in front in again bringing it across, and complete the knot in the usual way; the result would be a reef knot. If instead you pass the right hand end (which, after passing across, around and up under the end in the left hand, is transferred as before to the left hand, and is still in front) behind the end that was in the left hand (but in making the knot has passed to the right hand), in completing the knot you will make a granny. Again, take an end in each hand, the end in the right hand being behind; keep it behind, and pass it, as before, across, around and up under the end in the left hand; it will come up behind; still keep it behind, and on completing the knot a reef knot will be the result. If instead, before completing the knot, you allow it to pass in front of the other end, so altering its position with regard to its exit from around and under the other end, you will form a granny. In either case the knot is begun differently, and may be completed in two ways, a right and a wrong. The rule, simply put, is: Keep the end that comes up under (from around the other in tying the knot) always the same side. If it comes up in front of the other end, keep it in front of the other end in completing the knot. If it comes up behind, keep it behind, and you cannot help making a reef knot; all that remains is to pull it tight.—*Lancel.*

JOHNSTONS'

# Dental Miscellany.

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VOL. IV.—JUNE, 1877.—No. 42.

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## COHESION VS. MECHANICAL FORCE.

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Read before the Merrimac Valley Dental Association, by T. D. SHUMWAY.

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"No reasonably good operator loses a plug by softening, but the margins of his cavity giving away. \* \* \* \* Until we get a substance that will expand and contract with the tooth, so as not to loosen its margins, we will have some of our highest specimens of art crumbling away under our eyes."—*J. D. White, Dental News-Letter, July, 1854.*

No more fatal error ever crept into the practice of dentistry than the one that has obtained in regard to the manipulating of cohesive gold. It is passing strange that with the experience of the past to guide us aright, we should have committed the same blunder as those who first took advantage of this cohesive property with so great promise of success, and which resulted in such wide-spread disaster. The same story is told to-day. Instead of profiting by others' experience, we stupidly followed the same path, beset with like difficulties, expecting success, but with the same record of failure. The highest specimens of dental art the world ever saw have passed before us within the last fifteen years. They were indeed beautiful to behold. The only fault with them was, they were better than the teeth into which they were put. The reason so many of them failed, was because of the degree of perfection attained in their mechanical construction. They did not allow for expansion and contraction, and either the filling started from the walls or it leaked around its margins, and the whole structure was undermined. So thor-

oughly imbued had the profession become with the importance of using all the mechanical force possible, that there was a time when it was almost at the risk of a reputation to suggest in a convention of savans that the mallet was not an indispensable adjunct to a successful manipulation of cohesive gold. Now the more reflecting and conservative operator uses it sparingly, while some of its former most zealous advocates have abandoned it altogether, and returned to the "hand-pressure" by which they first made and maintained a reputation. The gold-beater, who, a few years ago, sold "soft foil" only to a few old fossils, now finds many purchasers for gold in the non-cohesive form. At the beginning of the present new year, the editor of the *Cosmos* said: "The truth is too patent to be disputed, either the means relied upon to arrest decay are insufficient for the purpose, or that they are imperfectly applied." Thus are the sanguine expectations of a few short years ago turned into ashes, and the boast of those who pointed to the great advancement made in dental science ended, as human vanity always ends, in humility. But there is danger in the reaction that has already begun, that the swing of the pendulum may carry us again to the opposite extreme. The history of the first attempt to use cohesive gold is very significant, and may be studied with profit. In less than a decade it had a most enthusiastic beginning and a most inglorious ending. Those who began practice at the time of the practical abandonment of "crystal gold" remember the wise counsel, that all kinds of cohesive gold must be shunned as one would a pestilence. It required a surprisingly short time to drive it almost entirely from the market. It has been saved a similar fate in this attempt to revive it only by the introduction of the rubber dam. Whatever failures may have resulted from our methods of practice, this fact still remains, that for the present, at least, gold in some form must be relied upon to arrest decay. We do not mean exclusively, for there are baser materials which, under some circumstances, are better than gold, but these are the exception rather than the rule. Then, if gold is the best material, and gold has not met the requirements, it follows that it must have been "imperfectly applied," and the fault is with the operator. Some time ago we endeavored to call the attention of the profession to the failures in our own practice, and also what seemed to us the proper remedy to apply. We proposed to arrest the pendulum midway, or, rather, that we were not using the material to the best advantage. It was, of course, difficult to convince the mind that a filling was imperfect on which so much care and labor had been bestowed. Some of us can recall clinics we have witnessed, when, after a long and laborious op-

eration, the demonstrator, with the perspiration coursing down his face, would sink into the nearest seat. Could it be that such a filling was imperfect? The thing was impossible. If the filling failed, the fault must be with the tooth structure. Twenty-five years ago Dr. White said it would fail if you didn't allow for expansion and contraction, and all this labor was to prevent both. The theory on which the method of using cohesive gold is based we believe to be radically wrong. When gold is made cohesive, it is in its nature entirely different from the non-cohesive form. Instead of subjecting it to the same manipulation, it should first have been our study to learn what the law was that governed it, and then follow its dictates. On the contrary, we found it inclined to obstinacy, and we had recourse to measures to compel it to submit. That success attended the effort no one will attempt to deny. The specimens of art all of us have seen attest the truth that it was well done. But what of the sequence? Has it met the expectations of the operator and the patient? Alas! in too many instances we are bound to confess it has not. Shall we then abandon the use of cohesive gold? I answer most confidently, no! What shall be done? Simply modify the practice by taking advantage of this cohesive property, in accordance with and obedience to natural law. Gold is endowed with the property of uniting with itself, forming one solid or compact body, and requires only contact to bring it into its closest relationship. This union takes place at an insensible distance, and is called cohesive attraction. What that is I don't know, only that it is a return to unity of molecules or particles of the same kind.

There are certain things that are opposed to cohesion, and the first is mechanical force. To demonstrate this, take a lump of rock salt and also the same quantity in the powdered form, and see which will dissolve the most rapidly in water. It is because mechanical force has destroyed cohesion in the powdered salt that it all disappears in the water, while the lump has hardly been acted upon at all. It is because cohesion is destroyed by mechanical force that solids disintegrate under the hammer. Chemical action is also opposed to cohesion. The action of affinity is a change of properties to a greater or less extent, and mechanical force always favors the action of affinity. Simple exposure to the air changes gold from the cohesive to the non-cohesive form. Gold has a natural affinity for iron or steel, and contact not only impairs the cohesive property, but also affects its malleability. A burnished surface is not favorable to aggregation. Mechanical force is necessary for burnishing, and this hammer-hardens the surface and makes cohesion difficult, if not im-

possible. The process of welding differs materially from that of a union by cohesion, and furnishes no analogy from which we can draw conclusions. Welding is a uniting by intense heat. Heat is employed to perfect the conditions by which cohesion is possible. Union takes place just the same if heat be absent. A union with hydraulic pressure is a uniting by mechanical action, and therefore must be a union of affinity, and not cohesion.

These, then, are the conditions necessary for perfect union with cohesive gold: 1. That the gold must be pure. 2. That heat sufficient must be applied to remove whatever may have collected on its surface to prevent actual contact. 3. That only force enough is required to bring the particles together, when union takes place insensibly, just as in two drops of water. 4. That the instrument used for the purpose must be softer than the gold, to exclude the possibility of burnishing. 5. That it must be of a material for which gold has no natural affinity. 6. That it must be elastic, that there may be little resistance. We know what will be the first question suggested by those who have not considered this matter well, and who are naturally skeptical—"How would you fill an approximal cavity in an incisor and obey the conditions?" It might with equal propriety be asked how one would shoot around a haystack. We should not attempt to do either with any hope of success. If cohesive gold is to be used, it should be because cohesive gold is indicated. If we were engaged in the general practice of medicine, we wouldn't—unless like the doctor who was so successful with fits that he always threw his patient into convulsions—expect to cure all diseases with one remedy. So with using gold—unless the cohesive form was demanded, non-cohesive, or perhaps other material than gold, should be substituted. In a cavity like the one mentioned we should fill with non-cohesive, and then, to get a good surface, I would veneer with cohesive gold, and satisfy the conditions—a very simple and practical method, and one not open to the objections which can be brought against veneering with steel and the mallet.

It is urged that this theory involves too many fine-spun points to be useful in general practice—that it may answer very well where the situation is favorable, or where the filling will not be exposed to much wear, as it must be too weak to bear the strain of constant use. Let us consider what we are attempting to do in the first place, and see if this method is too delicate to be practical.

Our operations are confined to organs as sensitive as any in the whole economy. Our patients have a right to demand that in the performance

of them we shall bring into practice methods in keeping with the delicacy of the operation to be performed. It is no reason, that because all the force that could be brought to bear on a delicate tooth structure has been employed, that it must always be so. The elaborate machinery which to-day is considered so indispensable in every well-appointed dental office, signifies that the tendency is to use extraneous power, and, of course, increase the amount of force to be applied. While we would not seemingly imply that machinery may not be advantageously employed in operations upon the teeth, we do deprecate the tendency to which it leads. Every one whose calling it is to attend to anything which pertains to the human organism, should be schooled and disciplined in delicacy of touch. No method should be thought too delicate for the practitioner in dentistry, and no theory looked upon as fine spun which promises to mitigate human suffering, and accomplish the object for which our specialty was brought into being. But the charge that is brought, that this is a fine-spun theory, is, we believe, wholly gratuitous, and without any foundation in fact. After nearly seven years' experience, we make bold to say that it is a practical method in any situation where it is possible or desirable to use cohesive gold.

We maintain that force is not necessary in filling teeth with cohesive gold, and that any application of it more than is needed to bring the particles in contact, is a positive injury. We believe further, that until the operator has been trained to take advantage of cohesion without force, that only gold in the non-cohesive form should be used.

When we first called the attention of the profession to this method of using cohesive gold, we did so with some fear. We knew how enthusiastic one was wont to be when they were riding a hobby—would it stand the test of time? If it did not, how could we take the back track? To-day we have no doubts and no fears.

We have demonstrated by experience that it is as well suited to exposed as unexposed places; that a union by cohesion alone, without force, will bear the strain of constant use, furnishing better protection to the tooth structure, lessening the liability of subsequent decay at the margins, better than any mechanical union with serrated instruments, or any union that is possible with steel and the mallet. In this return of variety to unity certain results are secured, which render cohesive gold the best material for tooth stopping in the hands of the competent dentist.

By competent I do not mean one skilled above his fellows, but only the average operator. I have little respect or patience for that method

of practice which is so difficult that only the few can obtain the mastery. What we want, is a method that one with the average natural ability, a taste for the calling and a proper education, can feel assured of success. We believe this method of using cohesive gold the simplest, and therefore the best, promising better results to the patient, with fewer failures to the operator. The results obtained by cohesion alone are:

1st. ADJUSTABILITY.—If the gold is brought in contact and then allowed to remain undisturbed, it is adapted to its position, and a more perfect margin is secured.

2d. MALLEABILITY.—Gold in the cohesive form is very soft, and will remain in that condition until something is brought in contact with it for which it has an affinity, when it becomes hard. If the instrument used be one for which gold has no affinity, its malleability is preserved, and this allows for expansion and contraction, as Dr. White terms it. If we allow for this, our highest specimens of art will not crumble away before our eyes, but will be preserved a lasting monument to manipulative skill. That spirit of scientific investigation which has been stimulated into action within the last decade in our profession must have had some exciting cause. If this inquiry had been directed to find out the cause of decay so as to prevent it, and thus save the patient the trouble and expense of employing artificial means for its arrest, it would be entitled to great respect. But the fact is patent, that much of this inquiry has been directed to give a satisfactory reason for the many failures that have resulted from the use of cohesive gold. The electro-potential and the electro-chemical theories both had their origin in the fact that teeth filled with gold decayed around the margins. One of these investigators declared "that gold was the most dangerous material for plugging teeth if preservation was the sole motive sought by the operation." "Pure tin-foil"—he goes on to say—"is safer than gold in any cavity where it can be applied," etc. Others there are who declare that the race is degenerating, and this is the reason why so many fillings fail. Now we are not quite prepared to accept the conclusions which have been reached by the advocates of the electro-potential and the electro-chemical theories.

We have great regard for science and for the results of experimentation, but it is our opinion that gold in the non-cohesive form will arrest decay, that it is not dangerous, and that we run no more risk than our fathers did, who practiced the wedging method, when we use gold in that way. We practice our specialty because we believe results are possible which are both a present and future benefit to those who come under our care. If we believed the race was degenerating physically, and

that the teeth were showing marked deterioration above those of a former generation, we should have little heart or hope for the calling in which we are engaged. But we believe that the reverse is true.

In the progress of civilization, we ought not to expect to find the teeth and jaws of the cave-dweller, but a development in keeping with the advanced condition of mankind. Such a development we have. It is idle for us to lament that the teeth of the present do not possess the same characteristics of the primitive man. The teeth have responded to the improved condition in which we find ourselves, just as the rest of the human organism. The mallet might have served a good purpose for the root-digger, the hunter, and the fisher, but the beautiful delicate tooth structure with which we have to deal demands that our method of practice shall correspond to and be consistent with the changes that have taken place. In this way only can we hope to arrest decay, trusting the wisdom of the future to find out the way by which it may be prevented.

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### OUR LONDON LETTER.

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TO THE EDITOR OF JOHNSTONS' MISCELLANY.

SIR:—It is now some time since I have ventured to occupy your valuable space, and even now I fear my effort will prove more than usually feeble and ineffective. In fact, sir, I have hardly yet recovered from the severe castigation I received from the doughty champion of the European Society of American Dentists. If that gentleman possess either a donkey or an animal of nobler breed, I hope he is more forbearing to it than one would infer from his treatment of your correspondent. Like many imitators he out-Herods Herod, for I cannot believe that the old woman whom he delights to honor by taking her as an example ever so belabored the objects of her aversion as he has belabored me. At the same time I venture to think that if "Betsey Lutwood" had claimed all Europe as her paddock, she might have had more than enough to do to drive off the donkeys. I have been anxiously watching for the "elevation of the standard of dentistry" in this benighted old Europe, but have failed to see a standard of any kind set up; however, I suppose Mr. Wright is preparing one, so more power to him and a better temper to help him to carry it, should he be the standard-bearer. The last display of professional taste which has come under my notice is something in the shape of a letter, in a London periodical, from an eminent practitioner

in Paris, to the effect that he is himself only, and not somebody else, and that he is not the maker nor vender of a mouth lotion; and this gentleman has such a peculiar notion of professional reticence as to sign himself as "Dentist to the Prince and Princess of Wales." When such vulgar ostentation comes from high quarters, one almost despairs of the rank and file of the profession, or that they will ever see the difference between following a profession and being professional. Oh, Mr. Wright, up with your standard!

I wrote to you some time ago, before I was bruised and broken, about a small Society which had been started in London, called the Society of Surgeons practicing Dentistry; and I think I told you how it exalted the surgeons and slighted the dentist, and held the dental diploma of no repute. I need hardly tell you that it has not succeeded in setting the Thames on fire, but lately it has been caught in the Guy-Fawkes-like act of trying to blow up the Dental Diploma of the Royal College of Surgeons. This small but unscrupulous clique has taken upon itself to carry its wisdom to the Council of the College of Surgeons, and to ask it to receive no certificates from dental students unless signed by members of the college; and that the Council should consider this degree sufficient for a teacher of dentistry or any of its branches, although he may not possess the dental diploma. Also that the dental diploma shall not be held necessary for any dental appointment at a general or special hospital. This may not be the correct wording of the memorial, for it has been, up till now, kept beyond the ken of those whom it most concerned; but I can assure you of the spirit and intention of the thing being truly represented. Well, sir, the precious document was signed by the President on behalf of the members of the Society, and the names of the members of the Society followed on the next page. Now it turns out that many of the members knew nothing whatever of the memorial, and so are both surprised and annoyed to find their names thus made use of. The names of honorary members were also made use of, who are not dentists at all and make no pretensions to dentistry, while some of its members who make pretensions to dentistry do so on the grounds of being surgeons, and not on the grounds of having any special dental education. How this pitiable attempt to upset the work of twenty years will succeed I cannot tell; but as the holders of the dental diploma are up in arms, it may be that "Mother Carey's chickens may come home to roost," and that the clever engineer of the "Society of Surgeons practicing Dentistry" may be "hoist by his own petard." One very extraordinary feature in this business is, that the President of the hostile asso-

ciation is also President of the Odontological Society, and was, up to its last meeting, President of the Dental Reform Committee, the main object of which is to compel every dentist to qualify by taking the dental diploma. I think there must be a treble-faced Janus lost somewhere in the mists of mythology, and that this century has witnessed his revival.

Unfortunately Dr. Slade is absent on sick leave, or perhaps he might have told us all about it. There was a general meeting of the Dental Reform Committee last week, when sundry resolutions were passed making the L.D.S. a *sine qua non* for the dentist, whatever other diploma he may possess. Of course some few surgeons who may wish to practice (!) dentistry may object to this, and so may others who like to enter the profession without any qualification whatever, except impudence; but if a man wish to practice dentistry, it is only fair that he should give some guarantee of his ability before he begins to get his living out of the public.

The latest addition to dental literature here is a "History of Dental Reform," by Mr. Alfred Hill. Although contemporary events may interest you a little, and will, I hope, do so more and more as the bonds of amity become stronger between us, still I do not expect the events of the last twenty years to attract much attention from amongst your readers; so I will not trouble you about the book further than to say that, as it is published at the high price of 10s. 6d., its readers are likely to be few enough, even on this side of the water.

I meant to have sent this in time for your May issue; but, as I was closely run, I have delayed it to give you a short account of the distribution of the prizes to the students of the dental school here. The ceremony came off at Miller's Rooms for the same reason that the last distribution came off at the same place, viz.: that we have no room in the school for the large number of people who are now taking an interest in dental education in this country. Professor Huxley was in the chair, and on the platform were Dr. West, Frederick Le Gros Clarke, Professor Gladstone and others. The large room was crowded, many no doubt being drawn by the reports of the Chairman. Professors Gladstone and Huxley both belong to the London School Board, the membership of which is not to be had without a severe contest, although it be entirely honorary in its nature, but not in the labor it entails. The Chairman—as became a man so deeply interested in education—made a very practical speech. He first gave an account of a visit to the Dental Hospital in Leicester Square. The operating rooms he compared to the wards of a general hospital, and the chairs to the beds. The chairs, he said,

reminded him of the barbers' chairs in America, and were suggestive of comfort and even of luxury, although, he added, the expression on the faces of the patients did not quite carry out the idea. He gradually went from the hospital to the subject of dental education, and contended that as life was short, and man's time and capacity limited, his first and great object ought to be to qualify himself to do well that which he professed to do, and that he, Professor Huxley, was justified in considering the dental curriculum of the College of Surgeons eminently calculated to fulfill such an object, if conscientiously followed out by the student. I hope you may soon have a copy of the address in hand for your journal, as from such an authority it is of interest to us all.

The school attached to the National Dental Hospital in Great Portland Street has advertised its course of lectures for the summer session. It is a small affair, but, as is not uncommon in such circumstances, it has assumed a big name, and has all at once become a college. "The National Dental Hospital and College" looks big on paper, and any one who has a small sense of congruity may be inclined to smile when he sees the place so designated. It is in opposition to the Dental Hospital of London and the school attached to it. I hope the time may come ere long when it will be found useful. At present its projectors do not depend so much upon its being required as upon its cheapness. They have made their fees lower than the parent school, which to my mind is a sign of weakness. A cheaper article generally means an inferior one in the matter of education, where so much direct personal attention is required.

About two years ago there was a committee appointed by the Odontological Society to inquire into the alleged poisoning by red rubber used by dentists. The committee have just delivered their report. I hope it may prove of interest to the profession, and show you we are not quite asleep in the old country. I hope I may again be allowed to occupy your pages, and still to sign myself your faithful

VAGRANT.

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#### REPORT OF THE COMMITTEE ON THE SUPPOSED MERCURIAL POISONING BY COLORED VULCANITE.

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An impression has long prevailed that it was possible for the salts of mercury, used to color red vulcanite, to exert a poisonous influence where red rubber plates were worn in the mouth; and the attention of the Odontological Society having been strongly drawn to the subject by Dr. Bathurst Woodman's papers (see "Trans. Odont. Soc.," 1875),

relating cases of supposed mercurial poisoning from this cause, a sub-committee was appointed to collect evidence and report upon the subject.

The Committee find it convenient to make their report under two heads.

(I.) Evidence derived from the observation of cases occurring in practice.

(II.) Evidence as to the *à priori* probability or possibility of the occurrence of the supposed poisonous effects.

In order to collect information referable to the first head, the Committee issued a number of circulars embodying the following series of questions, ninety-six of which were filled in and returned:

QUESTIONS.

1. How long and to what extent have you used vulcanite?
2. Has your attention been previously drawn to the subject under investigation?
3. Have you observed any local or constitutional symptoms which you attributed to the use of colored vulcanite plates?
4. Specify any such symptoms.
5. Have you observed similar symptoms when Black Vulcanite or Metallic Plates have been worn?
6. In the case or cases to which you refer, state whether the plate was used for carrying artificial teeth or for regulating purposes.
7. State, if possible, the sex, age, station and habits of patient.
8. Were there any unhealthy stumps or teeth remaining, and what was the general condition of the oral mucous membrane?
9. Were parts of the mouth, not covered by the plates, healthy or otherwise?
10. What was the general condition of the mouth as to cleanliness?
11. Was there evidence of syphilis or of the use of mercurial medicines?
12. Was a plate of any different material substituted for that which you believed to have originally induced the unfavorable symptoms, and what was the termination of the case?
13. Specify, if possible, the particular rubber used, the method of cooking (with reference to its perfect vulcanization), and the metal, if any, used in combination with the rubber.

Out of this number sixty-six give a decided answer to the effect that they have not seen any symptoms which they attributed to the use of colored vulcanite.

Thirty reply that they have seen local symptoms, but constitutional

symptoms are not mentioned in any of the replies as having been noticed.

Of the thirty papers named as reporting having seen local symptoms, twenty-one are answered in such a manner as to be inconclusive.

Throughout all the thirty the following disturbing causes are mentioned. In

- 6 papers uncleanliness is mentioned.
- 4 “ unhealthy stumps.
- 4 “ imperfect vulcanization.
- 1 “ misfit.
- 3 “ symptoms disappeared without change of material; and in one of these cases the plate was worn eighteen years afterwards.
- 6 “ gold substituted with relief.
- 1 “ dental alloy substituted with relief.
- 1 “ whalebone rubber ditto.
- 2 “ gold substituted, but without cure.
- 1 “ dental alloy ditto.
- 1 “ black rubber substituted with some improvement, but without cure of redness.
- 2 “ black rubber with pink gum is supposed to have caused the trouble, or rather, pink gum on black rubber.
- 2 “ cases not able to be followed up.
- 3 “ doubted by those reporting them.
- 1 “ known to have been previously salivated.
- 1 “ known to have had syphilis.
- 1 “ symptoms occur with black rubber.
- 2 “ hearsay cases; one disproved by the person making the report.

In the sixty-six papers giving a negative answer, reference is made by many to occurrence of similar symptoms with gold or black rubber plates.

One called attention to bad dietary, several to the non-conductive power of vulcanite. One to the fact of the patient having suffered from eczema as a probable cause of disturbance.

One paper calls attention to the readiness with which pink rubber loses substance by friction; and another relates a case of arrest of salivary secretion, which was restored under treatment and the piece worn afterwards with comfort.

And out of the thirty giving a more or less qualified affirmative answer, many might with propriety have given a negative answer, as may be inferred from the foregoing brief analysis.

The symptoms related are chiefly local redness, increased or decreased flow of saliva, looseness of teeth, etc.; in no single instance are such symptoms related as would lead the Committee to infer that the case was due to the effect of mercury rather than to other and more direct causes. The form of ulceration upon which so much stress has been laid as being characteristic of the effect of mercury, is not mentioned as having occurred in any case.

In fact, the inquiries of the Committee have utterly failed to establish the existence of a single case of unquestionable or even-probable mercurial poisoning due to the use of red vulcanite plates.

Under head II the Committee have little to add to the exhaustive report of Dr. Attfield, which has been placed at their disposal by the kindness of Messrs. Ash & Sons, at whose instance the experiments herein detailed were undertaken.

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#### A REPORT ON THE INNOCUOUS NATURE OF RED DENTAL VULCANITE.

By PROFESSOR ATTFIELD, F.C.S., Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain; Author of a Manual on General Medical and Pharmaceutical Chemistry, etc.

*London, 17 Bloomsbury Square, W. C., April 2d, 1875.*

TO MESSRS. CLAUDIUS ASH & SONS, BROAD STREET, GOLDEN SQUARE, LONDON,

GENTLEMEN:—In accordance with your instructions, I have made “an investigation of the influence, if any, of saliva and the other fluids of the human body on the pink and red varieties of vulcanite used by dentists in making artificial teeth-plates, gums and palates”; and I now report results.

I understand from you that these tinted varieties of vulcanite are made by heating pink or red “dental rubber,” under pressure, to a temperature of  $310^{\circ}$  to  $315^{\circ}$  F. ( $154^{\circ}$  to  $157^{\circ}$  C.), and that this “dental rubber” is prepared by incorporating sulphur and vermilion with pure india-rubber.

The innocuous nature of two of the three components of tinted vulcanite is admitted by everybody; sulphur and the india-rubber of vulcanite, as exposed in the mouths of persons wearing artificial teeth, are perfectly harmless. Vermilion, however, demands detailed notice from me. I will afterwards describe my experiments on the completed vulcanite made from these three substances.

Vermilion, sometimes termed cinnabar or red sulphide of mercury, has been celebrated from the earliest recorded times for its beautiful scarlet-red color, both Jeremiah and Ezekiel alluding to it as a paint or pig-

ment. As a medicinal agent it has always been found to be inactive and useless. It is true that until recent years the medical colleges of most countries gave, in their Pharmacopœias, directions for its preparation. But it was recognized medicinally only as a fumigating agent in certain affections of the mouth and throat, being, for this purpose, sprinkled freely on a hot iron shovel and the fumes inhaled. Even under these circumstances any medicinal action that was produced was not due to the vermilion as vermilion, but to other compounds of mercury as well as to certain sulphurous gases into which the vermilion was converted by the heat. Vermilion itself, according to the experiments and observations of the greatest French authority on such matters, Orfila, is inert, for he found that "no effects were produced on dogs by half an ounce, either when applied to wounds or when taken into the stomach." In America it appears to be used rarely, even in fumigation. In the "United States Dispensatory," however (twelfth edition, 1865), there is a statement which shows that if given internally the dose may be from ten to thirty grains in electuary or bolus. From this, by the way, an inference may fairly be drawn that if the wearer of a tinted vulcanite teeth-plate swallowed the whole of it, the vermilion in it, even if unprotected by the india-rubber, could not do him any harm. In Great Britain, vermilion or cinnabar is not now recognized as a medicinal agent. Taylor "On Poisons" (second edition, page 475) says:—"Cinnabar . . . is well known as a red pigment, and is often employed in coloring confectionery and wafers. I have not," he says, "been able to find any instance of its having acted as a poison on man. . . . Cinnabar is sometimes used for giving a red color to ointments—*e. g.*, the sulphur ointment. In such cases," he continues, "the quantity is very small, and can do no injury even if swallowed."

In short, vermilion is obviously so harmless a substance—that is to say, its action on the human system is so insignificant—as to be unworthy the notice of medical men, and, therefore, of the public generally.

Combined with sulphur and india-rubber, vermilion might, with reason, be expected to be even still less likely to be affected by, or to affect, the fluids of the human frame. For india-rubber and the hardened india-rubber termed vulcanite are each of so insoluble and inactive a nature, that either would probably retard rather than accelerate any action between a substance mixed with it and the saliva or gastric fluids. Then no soluble chemical compound of vermilion and india-rubber is known, or is likely to exist, or ever to be found. Nevertheless the importance of the question now under investigation, on account of the wide-spread

use of tinted vulcanite, demands that actual experiments shall decide on the inaction or action, if any, of saliva, and even of stronger saline, acid and alkaline fluids, on pink and red vermilion-colored artificial gums, palates and teeth-plates.

In the experiments about to be described, the influence of various liquids both on pink and on red vulcanite was first examined. Secondly, the effect of the fluids on an unvulcanized mixture of the ingredients of tinted vulcanite—that is to say, their action on “dental rubber”—was investigated. Thirdly, the question was decided as to whether or not any compound of mercury soluble in saliva, etc., is set free when the metallic pins and braces used by dentists are heated with dental rubber in the process of vulcanization.

*Experiments on Tinted Vulcanite.*—The vulcanite was finely shredded and a small teaspoonful of the shreds placed in the respective fluids. Thirteen fluids were selected, representing the liquids of the mouth and stomach, solutions of salts, acids, alkalies and spirits. The pink and red varieties of the vulcanite were separately treated. One set of twenty-six vessels containing the shreds and solvents was placed in a chamber carefully and continuously warmed to 98° F. (37° C.); that is to say, the mixtures were kept at about the natural temperature of the mouth. The temperature of other vessels and their contents varied with the temperature of the air in January, February and March. Each mixture was frequently stirred or shaken, so that each was freely exposed to atmospheric influences. The experiments were continued from day to day for one, two, three and four weeks, and each fluid was tested from time to time for mercury by sulphureted hydrogen, by electrolysis, and, in short, by the most delicate tests known to chemists.

1. *Saliva.*—At ordinary temperatures there was no action on the first day, nor on the second day. After another day or two the mixtures smelled sour, and after two or three days had the smell of decaying beef; no action. At the end of a fortnight no action.

Other mixtures of the pink shreds and saliva, and of the red shreds and saliva, were exposed at the temperature of the mouth for six hours daily for several weeks. The fluids were frequently tested for mercury, but no trace of that metal was detected.

2, 3, 4. *Solutions of* (2) *sulpho-cyanide of potassium, two parts in one thousand parts of water; (3) of chloride of sodium, of similar strength; and (4) of the sulpho-cyanide one part, the chloride one part, and water one thousand parts.* In these respective liquids the different shreds of vulcanite were exposed as already described. During the first week of treatment

no action occurred; at the end of the second week, no action; at the end of a month, no action.

5. *Pepsin*.—The influence of pepsin was next investigated. Ten parts of pepsin and one thousand of water, containing fifteen of strong hydrochloric acid, were mixed. Such a mixture, kept at 98° Fahr. for a few hours, will, as is well known, dissolve solid food in the manner in which solid food is dissolved in the stomach; indeed, it may be regarded, for all experimental digestive purposes, as the actual digestive fluid of the healthy sheep, pig, or calf, from which pepsin itself is obtained. Portions of the tinted vulcanite shreds were placed in different quantities of this pepsin-fluid at the temperature of the body, treated as before mentioned, and occasionally tested for mercury. No action occurred after one day, two days, a week, two weeks, four weeks.

6, 7, 8. *Alkaline Liquids*.—In aqueous solutions of (6) caustic potash, (7) hydrate of sodium, and (8) ammonia, each having a strength of about five per cent., the shreds were soaked, at the temperature of the body, for days and weeks. Not the slightest trace of mercury was dissolved.

9, 10, 11, 12. *Acids*.—The vulcanite shreds, pink and red separately, were also soaked, under the conditions just described, in (9) vinegar containing about five per cent. of acetic acid, in (10) a mixture of nitric acid one part to water five parts, in (11) sulphuric acid and water, one to seven, and (12) in diluted hydrochloric acid, one to nine. The digestion was continued, as before, for six hours daily for three weeks. The hydrochloric acid, when tested, yielded faint traces of a metal, so slight that by no reagent could it be proved to be due to mercury. The other acid liquids afforded not the slightest evidence of the presence of mercury.

13. *Alcohol*.—Spirit of wine one part to water three parts did not extract a trace of mercury from the vulcanites at any temperature.

*Experiments on "Dental Rubber."*—The objects of these experiments was the determination of the action, if any, of the thirteen solvents previously described, not only on imperfectly-vulcanized materials, but on the actual raw material of vulcanite. A description of these experiments is unnecessary; they were conducted, as before, for ten days or a fortnight. The dental rubber was also cut into shreds so as to expose as great a surface to the fluid as possible, and thus to make the experiments fully as severe as the former set. The results may be summed up in one sentence. Neither saliva, acids, alkalies, saline solutions nor spirits affected the dental rubber.

*Experiments on the Action of Metals on "Dental Rubber," at the Temper-*

*ature of Vulcanization, and on the Influence, if any, of Saliva, etc., on Vulcanite containing such Metals.*—The metals employed in these experiments were those commonly used for fastening artificial teeth into vulcanite, and for bracing and strengthening the different parts of the teeth-plate—namely, sixteen-carat gold, hard platinum (iridio-platinum), and “dental alloy” (platinum one, silver three parts). Some other metals, stated to have been found embedded in vulcanite teeth-plates, were also experimented upon—namely, nine-carat gold, German silver (copper, zinc and nickel), brass (copper and zinc), iron, steel, copper, tin and lead. Two wires of each metal were embedded in a tablet of dental rubber tinted with vermilion; indeed, there were prepared two such red tablets for each metal. The twenty-two tablets were then vulcanized in the usual way by heating to the proper temperature, and under the proper pressure, for the proper length of time. One of each couple of tablets was then physically and chemically examined, the other being kept for future reference. A smart blow of a hammer on a chisel laid bare a wire and its bed. After a careful scrutiny, both with the naked eye and with the aid of the microscope, the wire and vulcanite fragments were gently warmed with nitric acid and water (one to eight), the resulting liquid evaporated to dryness, the residue moistened with strong hydrochloric acid, again evaporated to dryness, and the latter treatment repeated. The last residue was finally diluted with water, and tested for mercury. Besides this severe process, some milder methods were employed in appropriate cases.

The sixteen-carat gold and the nine-carat gold, when chiseled out of the vulcanite, were found to be slightly tarnished, and the channel which the wire had occupied had a dull, metallic appearance; but neither the wire nor the fragments of vulcanite yielded the slightest trace of mercury to the acids or any of the many solvents already mentioned.

The platinum, the dental alloy, the tin, and the German silver, were not altered in appearance. No evidence of the occurrence of free mercury or any soluble compound of mercury could be obtained from the wires or from the beds they had occupied.

The steel had scarcely been affected by the vulcanizing operation, and had not produced any mercury; or, as proved by experiments with solvents, any soluble compound of mercury.

The iron was superficially converted into sulphide of iron, doubtless by the free sulphur of the “dental rubber,” for no mercury could be extracted by the solvents.

The lead had similarly affected and been affected by the dental rubber, but no soluble form of mercury could be detected.

The copper and the brass were somewhat deeply corroded by the sulphur of the prepared rubber; but the cinnabar of the mixture was not degraded. In both cases the corrosion was proved to be due to the formation of a thick coat of sulphide of copper, which crumbled readily between the fingers; but no trace of mercury was detected, and even moderately strong acids failed to extract mercury in any form.

#### CONCLUSIONS.

1. So far as any action on man is concerned, vermilion is a harmless substance.

2. So far as any effect or influence of the vermilion is concerned, the mixture of vermilion, sulphur and india-rubber, commonly termed "dental rubber," is also a perfectly innocuous substance.

3. Pink or red dental vulcanite, even when placed under the severest conditions of experiment, does not yield any trace of mercury to saliva, or indeed to other far more powerful solvents.

4. The metallic pins and braces in dental vulcanite do not displace mercury, or induce the formation of any compound of mercury soluble in saliva or in more powerful solvents.

5. The results of this investigation are such as would be anticipated by chemists. For, first, vermilion is well known to be of the most repellant or sluggish nature as regards any action on it by ordinary solvents, or even by corrosive fluids. Secondly, india-rubber, or the sulphurized or hardened india-rubber termed vulcanite, is, as regards resistance to corrosion or solution, one of the most chemically obstinate of substances, and would well play the part, if necessary, of protector from chemical attack of any material well mixed in it. Thirdly, even if metals extracted sulphur from vermilion, at the low temperature of vulcanization, as they do at a far higher temperature, they would do so because of their great affinity for sulphur: hence would properly be expected to combine with the free sulphur mixed with the vermilion and india-rubber, in preference to the sulphur already intimately chemically combined with the mercury.

6. The harmlessness of vermilion vulcanite should also be anticipated by medical practitioners; for it has been extensively used for the last fifteen years, and during that time hundreds of thousands of persons in Europe and America have worn, and are now wearing, pink and red vulcanite teeth-plates, and it is inconceivable that any wide-spread or even occasional harm resulting therefrom could elude the trained pow-

ers of observation of physicians and surgeons. The medical records, extending over many years, show that only three writers have ever suspected or regarded vermilion vulcanite as liable, in extremely rare cases, to be somewhat mischievous, and in these cases that the fault lay with the vermilion was not conclusively proved.

7. Though, however chemistry and medicine would concur in forecasting the innocuous nature of vermilion vulcanite, experimental evidence of its harmlessness should be most acceptable; for the integrity of a substance worn within the mouths of men and women in all civilized countries must be beyond suspicion.

8. I am of opinion that vermilion vulcanite teeth-plates are practically unaffected by saliva or by any substance which ever gains access to the mouth; and, in short, that the pink and red vulcanite artificial gums and palates now so generally worn are absolutely harmless.

I am, gentlemen, your obedient servant,

JOHN ATTFIELD.

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In concluding this section of their report, the Committee would call attention to a fact which bears upon the *à priori* probability of deleterious results following prolonged contact with vermilion, even when not locked up in the interstices of vulcanized rubber—namely, that men employed in vermilion works, who are constantly red from head to foot while engaged in their occupation, do not suffer from any local or constitutional symptom of mercurial poisoning.

The Committee, however, are of opinion that in a certain small percentage of cases vulcanite may exercise some irritating effects upon the tissue with which it is in immediate contact; but there is not the smallest evidence that these effects are due to its chemical composition, or, at all events, to the vermilion which it contains, inasmuch as precisely similar results are recorded as occurring in connection with the use of the uncolored vulcanite.

(Signed)

On behalf of the Committee,

SAMUEL CARTWRIGHT, *Chairman.*

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In the Children's Hospital in Paris, the nurse goes round at eight A. M., and gives to each child under sentence from thirty to fifty grains chloral-hydrate. The dentist follows in one hour, and the child wakes up an hour or two afterwards and wonders what has become of its tooth.

[*Pacific Medical and Surgical Journal.*

## THE DISCOVERY OF ANÆSTHESIA.

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BY J. MARION SIMS, M.D.

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[From the *Virginia Medical Monthly*.]

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[Concluded.]

Now let us see how the followers of Long worked out the problem of anæsthesia without any knowledge whatever of his labors.

Horace Wells, a native of Hartford, Windsor County, Vermont, studied dentistry in Boston, and at the age of 21 (1836) he opened an office in Hartford, Connecticut, to practice his profession. His mind was early turned to the subject of preventing pain in the extraction of teeth. In August, 1840, Dr. L. P. Brockett, of Brooklyn, N. Y., then a medical student, went to Wells to have a molar tooth extracted; the operation was difficult, and so painful that Wells said that there ought to be some method of mitigating such suffering, and that he thought a man might be made so drunk by the inhalation of nitrous oxide gas as to prevent the pain of dental and other operations. This shows how deeply impressed this subject was upon the mind of Wells at that early day. On December 10, 1844, Mr. G. Q. Colton delivered a lecture in Hartford, Conn., on "laughing gas," and after the lecture he administered the gas to Wells and several other gentlemen. One of them (Mr. Cooley), while under its influence, fell over some benches, and was evidently badly injured; when he returned to consciousness, Wells rushed up to him and inquired if he was hurt. He replied, "No." Wells then said, "You must have been hurt, for you struck your legs against the benches." The young man then, at Wells' suggestion, pulled up his pantaloons; the blood was running down his legs and his knees were badly injured. When again questioned by Wells, he said, "I did not feel any pain at the time." Wells then turned to a friend (Mr. David Clarke), who was near by and an eye-witness to all this, and remarked, "I believe a man, by taking that gas, could have a tooth extracted or a limb amputated and not feel the pain." So thoroughly was Wells convinced of this fact, that he told his wife on their way home that he intended to take the gas the next day and have a tooth extracted. On arriving home, he left his wife and went to see his friend, Dr. Riggs, to announce his great discovery, and his intention to take the gas for the extraction of a tooth. Riggs tried to dissuade him from it, but his mind was made up,

and he said, "As the young man did not feel pain at the time he was hurt, why cannot the gas be used in the extraction of teeth?" Early next morning (December 11) Wells called on Colton, and engaged him to go to his office at ten o'clock and give him the gas. He did so, and Dr. Riggs extracted a large molar tooth for Wells while under the influence of the gas. Wells did not seem to feel any pain. He remained unconscious for a few moments, and on coming to, he exclaimed, "A new era in tooth-pulling! It did not hurt me more than the prick of a pin. It is the greatest discovery ever made."

From that moment Wells' enthusiasm was unbounded. He immediately began the administration of the gas, and daily extracted teeth under its influence; and other dentists in Hartford adopted the same practice with like success. Dr. Marcy, then of Hartford, on witnessing Wells' operations, told him that when a student at Amherst College, he, with other students, had, for amusement, often inhaled nitrous oxide gas and also the vapor of sulphuric ether, and that the effects of the two were identical; and he suggested to Wells to try ether as a substitute for the gas. On this hint Wells tried it. He inhaled it himself, and he says, "I found it very difficult to inhale the vapor of ether in consequence of the choking sensation. For this reason, and for the reason that Dr. Marcy and myself came to the conclusion that nitrous oxide gas was not so liable to do injury, I resolved to adhere to this alone."

About a month after the discovery of anæsthesia by Wells, Dr. Marcy (January, 1845) gave the vapor of sulphuric ether to a sailor for the extirpation of a small wen on the side of his head. The patient was insensible and the operation successful, but Marcy, after this experiment, still advised Wells to stick to the gas as being more agreeable, and, perhaps, safer than ether. Wells continued the use of the gas, and the dentists (Riggs, Terry, Braddock and Crowfoot) and the doctors in Hartford were all convinced of its value as an anæsthetic. But Wells felt that his great discovery should be laid more broadly before the profession and the world, and early in 1845 went to Boston for this purpose. Through his former pupil and partner, Dr. Morton, dentist, he was introduced to Dr. John C. Warren, Dr. Charles T. Jackson, Dr. Hayward, and others. Dr. Warren received him kindly, and Wells remained in Boston several days with the expectation of giving the gas to a man who was to submit to an amputation at the hands of Dr. Warren. For some cause the operation was postponed. Wells was then invited to address the class at the medical college on the subject. He did so at some length, and then administered the gas for the extraction of a tooth.

Unfortunately the gas-bag was removed too soon; the patient was not sufficiently anæsthetized; he screamed out, and said he felt the pain of extraction, and the experiment was therefore a failure. Wells was hooted at, and unfeelingly hissed out of the amphitheatre by the thoughtless young men present, and he was pronounced a charlatan and his anæsthetic a humbug. He returned home greatly mortified at his failure, was taken suddenly ill and did not recover his health for many weeks.

In 1841-42 Morton was a pupil of Wells. In 1843 Wells established Morton in Boston, and for awhile was his partner. In 1845-46, after Wells' discovery of anæsthesia by the use of nitrous oxide gas, they had frequent interviews, sometimes in Boston and sometimes in Hartford. After Wells' unfortunate visit to Boston, Morton became greatly interested in the subject of anæsthesia. Notwithstanding Wells' failure in Boston, Morton subsequently witnessed his continued success with the gas in Hartford, and was anxious to try it again in Boston. During one of his visits to Wells in Hartford, in 1846, Morton asked Wells to show him how to make the gas. Wells, not having time, referred him to Dr. Chas. T. Jackson to make it for him, as he was a chemist. On returning home, Morton called on Jackson for this purpose. Jackson told Morton that the manufacture of nitrous oxide gas required some nicety of manipulation, that there was danger of his getting nitric instead of nitrous oxide, and that he was too busy at that time to make it for him. Morton explained that he wished to use it to render patients insensible for the extraction of teeth. Jackson then told him to use the vapor of sulphuric ether, saying that it was perfectly safe, could be easily procured, and that the students at Cambridge often inhaled it for amusement.

On the evening of the day (September 30, 1846) that Morton had this interview with Jackson, he gave the ether to a patient, and extracted a tooth without pain; and on October 16 he gave it in the Massachusetts General Hospital to a patient who had a tumor exsected from the neck by Dr. John C. Warren. On the next day (October 17) he gave it to another patient for Dr. Hayward, who exsected a tumor from the arm. He gave it also for Dr. Bigelow with equal success; and from that time it came rapidly into use by the whole profession throughout the civilized world. On October 27, 1846, Jackson and Morton published to the world, by letters patent, the discovery of *letheon* as an anæsthetic, but it was seen at once that their *letheon* was nothing more or less than pure sulphuric ether. Jackson soon resigned his interest in the patent to Morton, and sent a communication to the French Institute claiming the honor for himself of the discovery of anæsthesia by ether. Morton then

set up his claim as the real discoverer, giving Jackson credit only for some unimportant suggestions. While Jackson and Morton were sending bulletins to the Institute of France, Wells sailed for Europe in December, 1846, to lay his claims before the French Institute as the real discoverer of anæsthesia. His mission was a failure, and he returned home in March, 1847, to prepare the documents upon which his claim was to be presented to the Institute. And thus this tripartite war was waged with great fury, Morton and Jackson denying everything to Wells, and denying everything to each other. They denied that nitrous oxide gas had any anæsthetic properties. Wells brought forward his Hartford experience, and he gave the gas for surgeons in general practice, proving that prolonged operations could be performed under its influence. Dr. Marcy exsected a large gland, the patient being under the gas for fifteen minutes; Dr. Ellsworth amputated a thigh; and Dr. Berresford exsected a large tumor under its influence—all in Hartford. But notwithstanding all this, Wells saw nitrous oxide gas supplanted by sulphuric ether as an anæsthetic—ether which he had tried and rejected. He saw his claims as the great discoverer of anæsthesia unrecognized abroad, disputed and set aside at home, and he was disappointed and dispirited. He then went to New York to lay his claims as the discoverer of anæsthesia before the profession of the great metropolis. Soon after his arrival in New York he showed signs of mental aberration, and on January 14, 1848, in a fit of madness, he ended his life with his own hands.

A few years after the death of Wells, Morton applied to Congress for a grant of money for the discovery of anæsthesia (1853). The friends of Wells opposed the grant on the ground that Wells was the real discoverer. Then it was that the friends of Long came to the front, and opposed the claims of Morton, on the ground that Long was the first discoverer of anæsthesia. The Mortonites admitted that Long was the first to use ether as an anæsthetic, and the first to perform operations under its influence; but they urged that Long's claims were invalid, because he had not published his discovery in some scientific paper. They admitted that Wells tried to make the discovery, but asserted that he failed, because nitrous oxide gas could not produce insensibility to pain. They even attempted to prove this before a Congressional Committee appointed for this purpose. Morton declared that oxide gas never had, and never could, produce the effect claimed by Wells. To disprove this assertion, Prof. John Frederick May, of Washington, went before the Congressional

Committee, and demonstrated the fact that nitrous oxide gas, given according to Wells' plan, could and did produce insensibility to pain.

If nitrous oxide gas can produce insensibility to pain, as Wells claimed, then Wells demonstrated the fact that anæsthesia can be produced by the inhalation of this gas. Let us see how curiously, how providentially, this question has been settled, and settled to the satisfaction of all unprejudiced minds. Colton seems to have been incidentally an important agent in establishing the truth. We have seen how Wells' discovery grew out of Colton's lecture in Hartford in December, 1844. Colton continued his popular lectures on this subject for many years after this. In 1862 he lectured in the town of New Britain, Conn., and, as usual, related how the great discovery of anæsthesia by the use of nitrous oxide gas was made, giving Wells the honor. An old lady present wished to have some teeth extracted; she was afraid to take ether or chloroform, and she requested her dentist, Dr. Dunham, to get Colton to give her the gas for their extraction. He did so, and taught Dr. Dunham how to make the gas. One year after this (1863) Colton returned to New Britain on his usual annual lecture-tour, and he found Dunham extensively engaged in extracting teeth under the influence of the gas. Colton then seeing that the extraction of teeth under the influence of the nitrous oxide gas could be made a painless and paying business, induced Dunham to go with him to New Haven, with the understanding that Colton was to lecture and give the gas, and Dunham to extract teeth. After the first day Dunham returned home, and Dr. Smith, of New Haven, took his place, and in a few weeks people came by hundreds to take the gas and get teeth extracted. This experiment convinced Colton that it could be made a great business in a larger field, and he went to New York and opened the Colton Dental Institute, where, since 1863, he and his agents have given the gas to 97,000 persons without an accident.

All this disproves the assertion made by Morton and his adherents. If nitrous oxide gas produces anæsthesia to-day in the hands of Colton and others, it did in the hands of Wells in 1844, and Wells therefore preceded Morton in the discovery of anæsthesia. Nitrous oxide gas has been used in general surgery by many eminent surgeons in New York, Philadelphia, Baltimore and elsewhere. It has been used successfully in New York by James R. Wood, Carnochan and others. The writer has used it in difficult and prolonged operations (ovariotomy) requiring thirty, forty, fifty-seven and sixty minutes, and in one case one hour and fifty minutes, and always with the most satisfactory results. And this goes to

prove that Wells was right in claiming precedence over Morton in the discovery of anæsthesia by nitrous oxide gas in 1844.

Now let us summarize the facts set forth in the foregoing historic sketch. We know,

1st. That since 1800 the inhalation of nitrous oxide gas produced a peculiar intoxication, and even allayed headache and other minor pains.

2d. That Sir Humphrey Davy proposed it as an anæsthetic in surgical operations.

3d. That for more than fifty years the inhalation of sulphuric ether has been practiced by the students in our New England colleges as an excitant, and that its exhilarating properties are similar to those of nitrous oxide gas.

4th. That the inhalation of sulphuric ether as an excitant was common in some parts of Georgia forty-five years ago, though not practiced in the colleges.

5th. That Wilhite was the first man to produce profound anæsthesia, which was done accidentally with sulphuric ether in 1839.

6th. That Long was the first man to intentionally produce anæsthesia for surgical operations, and that this was done with sulphuric ether in 1842.

7th. That Long did not by accident hit upon it, but that he reasoned it out in a philosophical and logical manner.

8th. That Wells, without any knowledge of Long's labors, demonstrated in the same philosophic way the great principle of anæsthesia by the use of nitrous oxide gas (1844).

9th. That Morton intended to follow Wells in using the gas as an anæsthetic in dentistry, and for this purpose asked Wells to show him how to make the gas (1846).

10th. That Wells referred Morton to Jackson for this purpose, as Jackson was known to be a scientific man and an able chemist.

11th. That Morton called on Jackson for information on the subject, and that Jackson told Morton to use sulphuric ether instead of nitrous oxide gas, as it was known to possess the same properties, was as safe, and easier to get.

12th. That Morton, acting upon Jackson's off-hand suggestion, used the ether successfully in the extraction of teeth (1846).

13th. That Warren and Hayward and Bigelow performed important surgical operations in the Massachusetts General Hospital (October, 1846), on patients etherized by Morton, and that this introduced and popularized the practice throughout the world.

In Boston, Mass., a monument has been erected to the discoverer of anæsthesia, but no man is designated thereon by name. The citizens of Hartford, Conn., have erected a bronze statue of Wells (by Bartlett) in their Capital Park, claiming for him the discovery of anæsthesia. This is as it should be. We have no objection to it; and would suggest that the names of Long, Wells, Morton and Jackson be inscribed on the Boston column, one on each side, as co-discoverers of anæsthesia. The State of Georgia will, at no distant day, erect at its Capital or its University a statue of Long, who was unquestionably the first discoverer of anæsthesia.

All the claimants of the honor of discovering anæsthesia are Americans. To each is due a certain measure of credit, but no one man can claim this great honor exclusively. The names of Long, Wells, Morton and Jackson will doubtless be associated as co-laborers in the great work, and to these must be added the immortal name of Sir James Y. Simpson, who introduced chloroform and enlarged the domain of anæsthesia.

Sir James received the highest honor from his government in recognition of the great service he had rendered humanity. I wish we could say the same of our benefactors and government. Our great republic leaves our discoverers and scientists to rest in obscurity and to starve.

Long lost his all during our great civil war, and in his old age he is now being worked to death for the daily bread necessary to support himself and family.

The fate of Wells, Morton and Jackson is most pitiable.

Wells, disappointed in carrying off the honor of the great discovery of anæsthesia, became insane and committed suicide in New York in 1848.

Morton, disappointed at not receiving a pecuniary recognition from Congress for his labors, fretted himself into a congestion of the brain. In July, 1868, he returned to New York from Washington in the wildest state of excitement. Fatigue, anxiety and sleepless nights had exhausted his vital powers. Dr. Lewis A. Sayre and Dr. Yale were called to him on the 15th July. They considered his condition as critical, placed him in the hands of a trained nurse, ordered leeches to his temples, cups on the spine, and ice to his head. Dr. Morton would not submit to treatment. As soon as Dr. Sayre left he ordered his buggy to go to the Riverside hotel, saying he knew he would soon be well if he could get out of the hot city. He drove furiously up Broadway, and through the Central Park. At the upper end of the Park he leaped from his buggy, and ran to a lake near by to cool his burning brain.

Being persuaded to get into his buggy again, he drove a short distance, then leaped out, and jumping over a fence, he fell down in a state of insensibility. He was then taken moribund to St. Luke's Hospital, where he died an hour or two later.

Jackson has been for some time in an insane asylum, hopelessly incurable.

How mournful the fate of these remarkable men ! How sad to think that their lives were embittered with envy, jealousy and uncharitableness toward each other ! Let us forget their faults, and remember only the good that has resulted from their labors.

It is said that "The evil that men do lives after them." But here the good that these men did will live after them, and live forever.

Vaccination is perhaps the greatest boon ever conferred by science on humanity. Anæsthesia is the next. England gave us the one. America the other. England recognized the labors of Jenner, not, however, in a manner commensurate with the magnitude of his work. America should recognize the labors of Long, Wells, Morton and Jackson, if not in a manner commensurate with the value of their work, at least to such an extent as to relieve the necessities of their several families, thereby proving that Republics are not always ungrateful. Government aid, voluntarily tendered at this time, would be acceptable to all of them, for they are all really in need of it. Each of these families ought to receive at least one hundred thousand dollars.

I propose, then, that the whole medical profession, North, South, East and West, unite in asking Congress, at its next session, to appropriate this sum, as an anæsthesia fund, to be divided equally between the families of Long, Wells, Morton and Jackson.

One hundred thousand dollars is a small sum to offer where men have sacrificed their lives for the good of the whole civilized world, leaving their families in straitened circumstances. How small this pittance, when measured by the benefits these men conferred on the world !

Let us, as Americans, rise above all party, all prejudice, all sectionalism, and demand of the government this appropriation for the great work accomplished by these martyrs to science and humanity.

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A boy having been told that "a reptile was an animal that creeps," on being asked to name one, on examination day, promptly replied, "A baby."

## ANOTHER DENTIST BEFORE COURT.

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By C. M. WRIGHT, Basel, Switzerland.

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MR. EDITOR: It is on record that a prominent member of the dental profession, a prominent member of an advanced dental society, has stated his solemn conviction that if asked in a court of justice whether the profession of dentistry does save or destroy more teeth by what it does, he would say, "I have to answer the truth: it ruins more teeth than it saves." This statement, so "startling," has been wafted over the seas, and members of this profession of dentistry, all over the world, are confronted with it; many, no doubt, will consider seriously the question, review their own experiences and observations, and be prepared after awhile to give their answers, if called upon, in a court of justice. Many of us have been taught to believe in the noble work of our profession. We have not questioned the utility of our exhausting labors. From our preceptors, our professors in the colleges, and our writers for the periodicals, we have absorbed the idea that dentistry has a high mission, and if asked what that mission is, I think ninety-nine in a hundred of us would answer without hesitation, "The saving of teeth." But it is possible that we have all been wrong. We, in common with all the world, like to follow a leader. We do not *think*, if we can help it. We bow to an authority thankfully, and without question. We accept our remedies for disease blindly, from an opinion uttered by a mortal a little bolder, a little more independent than ourselves. We accept the mallet, cohesive gold, creosote, iodine, a standing or sitting posture, just as we accept spring bottom trousers, bell crown tiles, turn down or stand up collars. We feel uncomfortable when we have used carbolic acid instead of beech wood creosote, and yet, as for absolutely *knowing* the difference in the action of either, we may be like the parrot—we have learned to smatter a few words. That we are different from other professions—other scientific or learned professions—I do not believe (unless it is that we are a young profession and are not *quite* so trammelled with the opinions of the fathers). The theological profession have gone on propounding doctrines of the middle ages to the present day, and a very little change is called a reformation. The medical profession write prescriptions and give medicines as blindly as we do, with perhaps more confidence, because an aching head or an aching belly cannot be disposed of as easily as an aching tooth, and the patients must accept the

doctor's remedies. The legal profession live on precedents and former decisions. We are, then, no worse than other followers of a profession. This statement in reference to our specialty is also only *startling* on account of its source. In Europe and America otherwise intelligent people (not dentists) have believed this statement in their hearts, and many mouths have uttered it. Other professions do not escape like judgment. Who has not heard it said that the lawyers foster quarrels, and that the world would be better without this useful class of professional men? In regard to the injury doctors are supposed to do the human race, we need only to refer to the "Humors of the Day" in the columns of any weekly newspaper to find jokes about the "grave murders doctors do"—"the scientific killing"—"the monuments in cemeteries to the doctor's skill," etc., etc. All these jokes and floating expressions are simply foolish—and the perpetrators are usually the first to apply to the doctor or lawyer in their first disorders of body or property. No doubt, also, the dentist whose statement before court we have heard could be convicted in the same way by his own mouth, if not by his words. No doubt he has had teeth saved by some member of the profession of dentistry. Personally, ever since I read the statement, I have been considering it. It has come up before teeth that I have examined since that time. It has been a stimulant to memory of past observations; and thus far, while I am willing to admit that we do not save all the teeth that are presented to us; while we make lamentable failures; while we have every week, perhaps, occasions to blush for the short duration of some of our past endeavors; while we have, in fact, plenty of lessons that should teach us modesty, if not humility, in our calling, and while we see, too, the failures of others distinguished or unknown in the profession—I believe that dentistry does save millions of teeth to usefulness and comfort that would otherwise be the cause of suffering, disease, or the pincers of the blacksmith or barber. Here where so much decay has been filed out by old practitioners and the surfaces cauterized, and where amalgam has been plastered in between teeth, teeth have been saved by the hundreds, that would certainly have lost their crowns and festered as stumps in the mouth. Again: if I was compelled to appear before this court and answer the question, "Is bad dentistry better than none?" I should have to plead, "For myself, any *dentist* is better than none." If I had a decaying tooth, I should rather have half of the decomposed substance cut away and a little putty or paste or silver coin and mercury crowded into it with bungling fingers and uncouth instruments, than to let that tooth go without an effort. I believe that

even the half-done operation would do good rather than harm to my tooth. From my preceptor down to the dentist I may have met yesterday, I have never known a dentist who has not done more good than injury to the teeth. That we attempt operations for salvation and even resurrection that the fathers would have left alone or replaced by bone teeth, no one will deny. That in these cases a proportion surely fail we cannot deny; but this is not doing injury to teeth—it is simply *trying* to save a drowned man by employing all the means for resuscitation, instead of sitting by the body and howling. The man may never awake and our efforts may have been in vain. Have we done more harm than good? If we, as dentists, do more injury than good, let us quit our calling, and go to building houses, tilling the land, or preaching the Gospel—and in ten years after the 15,000 or more dentists of the world have been expunged or annihilated, let us look into the mouths of the dear people. The man in the moon would be disturbed by the groans and howls from earth. In a few generations we should have no “human face divine,” and the ingenuity of the whole medical fraternity, and of chemists, would be exercised in finding a *remedy for toothache*. The other ills of the flesh would sink into insignificance when compared with this “hell o’ a’ diseases.” Mr. Editor, my own teeth are aching now in sympathy—and if all the dentists of Europe should suddenly disappear, I should make the trip to New York and beg Dr. Clowes to *ruin* my teeth rather than “let them go.”

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## THE DYNAMIC FORCE, OR, “MAGNETISM OF THE SEXES DURING DENTAL OPERATIONS.”

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Read before the New Jersey State Dental Society by DR. CHARLES A. MEEKER.

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There are among my confrères in this Convention whose practice reaches the score in years some who have noticed and experienced certain peculiar forces emanating from the sexes during dental operations in the mouth. Some operators of a highly nervous temperament after an operation in filling (more particularly with gold), with a patient of the opposite sex in temperament, complexion and physique, over a difficult cavity, feel really prostrated at its termination—the whole energies, the brain, the will, nerves and muscles have been concentrated in the ends of the fingers from thirty minutes to two hours. The question

comes, Is this prostration alone from the work? The experiences of many decides.

The operator may not feel like resuming; but his living comes from work, and the appointment book says next. The next patient may be like you in temperament and complexion. You go to work for thirty minutes or an hour, and at its close your feeling of prostration is gone. Yet, if you are an honest dentist, your brain and nerves are at as high a tension, and you have done as much work for one as the other.

Patient No. 1 says it was not really half as bad as she thought it would be, and she does not feel fatigued at all. No. 2 says she will be glad when her work is all finished; it tires her out so, she is not fit for anything the rest of the day. Now to the thoughtful dentist there is more in THIS than the mere words and feelings expressed. I think there is a dynamic force that has something to do outside of the position and manipulation in the filling the cavities. What right name to give it in this day of progress I do not know. One hundred and forty-two years ago Anton Mesmer first proclaimed a subtle force inherent in the human family, and called it animal magnetism. Later, a commission of the Paris Academy of Sciences gave it a quasi-assent as a new science, calling it the same as Mesmer, and then dropped it. Later, Baron Richenbeck (whom you all know), a German chemist and scientist, made many experiments with what he called sensitives—persons of both sexes who were peculiarly sensitive to the influence. He gave it the name Odic Force. Later still, Tyndell, Crookes and Varley gingerly touched it, and called it Physic Force. And though I have been looking at its effects from the dental operating chair, and so far know less than any of them, I call it Dynamic Occult, or Secret Force.

It may be somewhat foreign to dentistry; but as we have had considerable on dental subjects proper, this may not come amiss, and may bring out the experiences of our fraternity, whose practice reaches far enough back to be rich on this subject.

My first attention to the subject, as a force at all, came some six years ago, in reading an article in the *Dental Cosmos*, by Prof. McQuillen. I have not the paper now, and remember it very faintly. It was noticing what he called electrical phenomena, conducted through the steel instruments, together with something about his wearing silk shirts, and attributing the force of the electricity in the system to the wearing the shirts (Professor can correct me if present). It was a thought which took root; but I never gave it much attention until February of this year, when a patient came under my care who had been under surveillance in a

private insane asylum, and was only partially cured at that time. She was not a desirable patient, and had been under the hands of a number of New York State dentists, whom I am certain had not been able to insert a filling they could themselves have been satisfied with. She was of medium height, light complexion, sanguine nervous temperament, eyes which never looked in one place an instant. I commenced the excavation of a cavity in the right canine palatine approximal. She would not allow me to use the engine, and I was forced to use the excavator exclusively. I worked half an hour, and made hardly any progress on account of her restlessness; but I had made up my mind I was going to do better than the rest that were inserted. Some twenty minutes more enabled me to shape it satisfactorily and apply the dam, and when I commenced the insertion of the gold, her motions had increased so it was an impossibility; so I placed my left hand on her head and worked with my right, and in a few moments later I was surprised to find her asleep. I redoubled my efforts with both hands, and at the end of thirty minutes (during which I malleted five) I finished with the engine.

I called her attendant in, who was surprised at her sleeping, and wakened her. She spoke of a pleasant dream, and wished for another appointment. After her departure I was surprised to feel the utter prostration which came over me, having felt extremely well before. It then being three o'clock—it having been a one o'clock appointment—I felt that I must lay down before feeling refreshed. Dr. McQuillen's article, I then thought, would make me notice more on the subject thereafter.

I performed three operations for the same patient afterwards; twice I felt the same prostration; before the third operation I thought of the non-conductibility of silk, and placed a silk handkerchief over the head (as I was obliged to keep it firm), and refrained as much as possible from contact with my left hand on the epidermis, the idea to me being they acted the same as the circuit poles of a battery. The filling was satisfactory, though taking a longer period, and the patient kept awake and wondered why she could not sleep again. I felt nothing from the ordinary, consequently I thought there was some force—call it the name you choose.

Another case was that of a young man of a positive mind, for whom I operated on the lower molars, crown fillings. At the first appointment, though the cavities were easy, I seemed to be retarded in my work very much. There seemed, as outside influences would explain, a want of confidence on his part in the ability of the operator, though there was none on mine, as I felt the

confidence which work gives us. I finished satisfactorily, and the second appointment was ended in one-third the time. He was perfectly still, asked no questions, and made no comments. Though relatively there was no difference in the depth or circumference of the last, and no discomfort with skillful cutting, as all were crown decays, the difference, as I said before, could be explained. First, by want of confidence. I think, though, at first he drew on my nervous forces, we both being positive, and in a positive condition. The second time the forces were equally balanced; we were both in a negative condition.

Another patient, a physician, weight over 200, opposite in temperament and complexion, went to sleep on plugging (by hand) a crown cavity in the upper right first molar, a fatigue resulting afterwards with no particular difference but what would result from ordinary work.

I use a Morrison chair, which you all know is iron. I thought it would be well to notice any difference in effects upon insulation. I placed four small salt cellars under each foot. The first patient afterwards was a lady, dark complexion, quite excitable. After a filling in the right central, she complained of a feeling of great lassitude and the extreme warmth of my rooms; my thermometer showed  $74^{\circ}$ , month March. The excavating and plugging was not painful, the time consumed one hour; we were both feeling good at the commencement and I felt the same then. I thought there might be something in the insulation. The next noticeable patient, one whom I never like even to see, let alone work for, who showed her temper whenever she could, one who stops every minute to wipe her mouth from imaginary contamination from the instrument, who must rest awhile, does not want the engine, nor the excavator, nor the rubber dam, and when it is on persists in wiping her mouth and adjusting the dam at the moment you are conveying the gold to the cavity and it gets in any place but the right one, and altogether does as much talking as she can. She gets me nervous, and it seems to me I cannot satisfy myself in regard to my work, try as hard as I will. In this patient there is a positive clashing in the nervous forces, perhaps, more on my part than the patient's, and I feel the consequent exhaustion.

When there is a feeling of perfect accord between both parties, I get absorbed in my work, lose my identity, and do not care for intrusion. You are satisfied. Your patient also. You say good-day and feel in good condition. The conditions there are a perfect balance of the magnetic forces.

I have noticed a number of little facts regarding this subject which seem interesting.

That where the operator keeps in a positive state, and refuses to sympathize in his own mind with the patient, the loss of vigor is not so great, even after a protracted filling, and that no patient enters sleep.

That the patient most liable to abstract vitality are the ones opposite in temperament, vitality, complexion—less or more vitality seems to make a slight difference.

That succeeding a thunder shower the operator is strongest in magnetic forces, and that what would seem strange, and which I can offer no reasonable explanation, that before meals it is the strongest, and less directly after, the maximum being the middle time between them all. It might be that the magnetic forces proceeding primarily from the brain, the process might abstract a certain portion.

As I have brought this subject before the Society, and we obtain our knowledge from the experiences and discussions of others than ourselves, I would suggest for better studying this interesting subject. The placing a sufficient number of squares of GLASS AREA LIGHTS, 2 ft. 1 x 1 inch thick, to form a floor upon which the experimenter could place his dental chair and have sufficient standing room, so making a complete isolation electrically of both patient and operator, and in time hope to know the exact laws which govern this force, which knowledge, of course, will benefit us each.

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### SMALL MOTIVE POWERS.

By THOS. FLETCHER, F.C.S.

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The following details of an experiment show pretty clearly that, although a failure in my own hands, there are many places where a really effective power may be kept, literally, "on tap."

The question of power for working grinding and polishing lathes, etc., has so often been raised by correspondents, that at last the thing "became monotonous," as Mark Twain says, and I took up the matter, partly for my own satisfaction, and partly to satisfy others and save correspondence.

The conditions necessary are, that the power shall be instantly available at all times, cleanly, little or no trouble, and neither bulky, noisy nor expensive. Steam is, as a rule, utterly out of question; gas engines, such as Otto and Langen's, are costly, bulky, and unless on a good foundation cause great vibration and noise; and, so far as we know at present, water is the only practically available power suited for the purpose.

After, without success, trying to obtain a small turbine or cylinder

engine for water, suited to an ordinary household supply, I made a series of experiments as to the best form and arrangement of motor. The conclusion arrived at was that a small fan driven with a high-pressure jet of water was both the most practical and also the most economical.

After trying various forms of cup or bucket, it became evident that a flat plate, taking the direct impact of the water, was the best; and I constructed a wheel, six inches in diameter, with blades one inch square, for experiment. The water jet struck these blades in the centre when at a right angle, and the conditions under which these experiments were made were as follows:

Water supply-pipe, one-half inch bore, with ordinary screw-down tap, having a bore three-eighths inch at the nozzle.

Pressure of water varied from eight to ten pounds on square inch.

Pressure remaining in supply-pipe whilst the arrangement was working, about one pound on square inch.

Bore of jet nozzle, one-sixteenth inch (a larger nozzle was useless).

Distance the water was thrown horizontally when allowed free passage into the air, 18 feet.

Water used per minute, seven-eighths of a gallon, or  $52\frac{1}{2}$  gallons per hour.

Force of impact of the jet,  $3\frac{1}{2}$  ounces—*i. e.*, the jet would keep this weight suspended.

Revolutions of wheel per second, about nine.

On the shaft to which the wheel was fastened I fixed a grooved pulley two inches in diameter, and passing a cord round this, I suspended weights on the cord to act as a friction brake. Half a pound reduced the speed to about five revolutions per second, one pound to one revolution per second.

Removing the pulley, I mounted a hard wheel brush and tested the power for polishing. It appeared, as near as I could judge, that the power is about half what is required. I have no doubt that it would have been ample to drive a burring engine or for light polishing work.

It will be noted that the water pressure I have is exceedingly small, a common pressure in many towns being twenty-five to thirty pounds on the square inch. Where such a pressure is available, there is no doubt a small fan would drive an ordinary lathe with ease. One thing was most satisfactory—the fact that the power actually obtained was a very close approximation to the calculated theoretical duty, proving the practical efficiency of a very simple and cheap arrangement. Where

higher water pressures are available there is no doubt that this will prove an efficient motive power, and the consumption of water would be very slightly increased, as compared with the power obtained.

Of course, with a larger water supply-pipe and a larger bore jet, a proportionately greater power would be obtained; but my object in this experiment was to test the actual power required for a polishing lathe and to compare this with the power given by a definite measured water supply, thus forming a standard for calculation and a clear proof of what was really necessary.—*British Journal of Dental Science.*

## NOTES ON AN OLD AMALGAM AND AMALGAM STOPPINGS.

By THOMAS ROWNEY, L.D.S.

Some years ago, while engaged in a course of investigation on alloys, I came upon some interesting results by combining gold and silver with metals of the volatile class. I found that when these volatile metals were completely driven off, there remained a compound whose properties differed materially from the normal combination. Foremost was the loss of the sonorous and elastic characters, which were not recovered by any amount of remelting.

Here the matter remained for some time, as other and more pressing objects occupied my leisure hours. At length the experiments were resumed, and resulted in the production of an alloy which, mixed with *pure* mercury, gave me more satisfactory results than any other preparation I had previously used.

The small quantity of mercury it required to make it plastic, and the readiness with which it could be used in the most difficult cases, in children's mouths, were charms not to be resisted. Submitted to the various tests published from time to time, as proofs of the value of an amalgam as a filling, it took a most satisfactory position.

Again and again it was put aside as novelties cropped up, or was tried in competition with them; but at last they all gave place to it—as I was convinced by most careful observation of cases daily under my control, that I had an amalgam which met my requirements better than any I could purchase. This old amalgam packs dead, hardens readily, and seems to have no disposition to assume the spheroidal state. It contracts so slightly that ammoniacal solution of carmine fails to effect an entrance between it and the smooth surface of a glass tube after twenty-four hours' contact. I do not, however, wish it to be thought that I

consider such a solution as the crucial test of the value of an amalgam. Many may come out of it unscathed which readily succumb to sulphureted hydrogen evolved from its ammoniacal solution, when the glass tube and its metallic contents are used as a stopper to the gas-bottle. From this test my old amalgam comes out most satisfactorily. The surface, being in perfect contact with the glass, remains bright as a polished mirror after twenty-four hours' exposure; not even a zone of discoloration at the lower edge, where it was carefully ground down to avoid any error from overlapping. Such is its behavior in the mouth when properly used. Unfortunately it is possible with even a good amalgam to make a bad stopping. Much depends upon the preparation of the cavity, and the quality of the adjacent dentine and enamel. If the latter is structurally imperfect, a good stopping can rarely if ever be made, either with amalgam or gold. Supposing, however, the walls to be good, there are other avenues of failure. Mixing the amalgam with an excess of mercury is one important factor in non-success, and the way in which the filling is packed in the cavity is another. The dental engine judiciously used is invaluable for shaping the cavity; but care must be taken that there is perfect contact of the amalgam with the walls, or failure will still result.

I have seen many cases in which I could clearly trace horizontal layers in the plug, and consequently a series of minute cavities arising from imperfect contact of these layers at their peripheries. In such fillings the best amalgam would yield bad results.

It is my invariable practice with amalgam fillings, first to ensure perfect contact with the walls of the cavity. This is more readily done by using a thin flat-bladed instrument, which being left soft can be quickly adapted to every exigency which may arise from position of the cavity. I then carefully carry a portion of the filling to the lowest point, drawing it upwards to avoid enclosing any air. This being done on all sides, I have a perfect metallic jacket, into which amalgam is pushed in small vertical layers, until full. It will be readily seen that by this plan, if there chances to be any fissure in the central plug, it will in no way be inimical to the stability of the stopping as a whole.

To ensure the best results, I make use of a tin or gold plugger, for condensing the last portions of the amalgam. Either of these instruments effects the removal of the surplus mercury, which in all amalgams has a tendency to come to the surface during manipulation. I finish off with an agate burnisher. This latter instrument has much to recommend its use in all plastic stoppings. It leaves a smooth surface which

needs no polishing, and prevents that unpleasant galvanic action, which so often results from the contact of the steel burnisher.

I am preparing, and shall shortly send to the various dental depots, small sample packets of this old amalgam, so that others may have an opportunity of proving its value. However it may be appraised by the profession, I shall be satisfied; but after having seen its stability in so many cases, I shall not readily cast it aside for other and newer preparations, some of which have proved worse than useless in my hands, though used with every care.

I am not vain enough to suppose that my *modus operandi* is new to the majority of my professional brethren, nor do I wish it to be thought that I write *ex cathedra*; but I am not without hope that my notes may help some to understand and avoid the causes of failure with amalgam stoppings, which now and then puzzle and perplex the most astute operator. I have much to learn to keep pace with the rapid strides which science is making in every department, and, after nearly thirty years' experience, I have something to unlearn, and the sooner I can do it, the sooner I shall be satisfied.—*From Monthly Review of Dental Surgery.*

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## NOTES.

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In Memoriam—A. P. Stevens, of  
Portsmouth, N. H.

At the semi-annual meeting of the Merimack Valley Dental Association, held at Lynn, Mass., May 4th, Dr. C. G. Davis, of New Bedford, addressed the Association as follows, in reference to the life and death of the late Dr. Albion P. Stevens of this city:

MR. PRESIDENT AND GENTLEMEN: As a friend of Dr. Stevens—and who that knew him was not his friend?—I feel it to be a sad but pleasing duty to offer, on the altar of that friendship which cherishes kindly recollections, a few words, however inadequately expressed, as a tribute to his memory. Whatever of faults fell to the lot of my friend, when viewed from the stand-point of others, I see only that which challenges my respect. There was an atmosphere created by the presence of Dr. Stevens that drew others, as well as myself, at once within its influence. I shall not forget the first time I ever saw

him; it was on the occasion of my first meeting with this Association at Salem. Taking a seat in the rear of his, my attention was soon attracted by the shape of his head, and the high moral qualities indicated thereby, which impressed me that the man was one of more than common ability among us. At that meeting I obtained an introduction, and from that moment till the day of his death, a constantly ripening friendship was maintained between us. We had frequent and prolonged private interviews, from which I always came away feeling myself much his debtor. One of the secrets of his influence was the dignified geniality of his manner in intercourse with all men, but especially with his professional brethren. His dignity was not that of the self-opinionated, but it was that of self-respect for a conscious manhood, made gracious by an equal respect for the manhood and brotherhood of others; while added to this was the intelligence of a naturally strong and original

mind, well furnished by a reflective observation and love of books. His knowledge of our professional literature was not excelled, if equaled, by any member of this Association; I am not sure that I am saying too much if I say, by any dentist in New England. I need not remind you with what respectful attention you always listened to whatever he said upon any subject under discussion in this Association. There was no shadow of pretension or of arrogant self-assertion in his make-up; whatever he did, or however well he did it, it was done with becoming modesty and a desire rather to be useful—to get and impart useful information—than to display himself or his attainments.

As a practical dentist he had few equals in many of the qualities that go to the make-up of a successful man. He always inspired confidence, and commanded the respect of his patients to a remarkable degree, not only by his manner but by the gentle magnetism of his touch, doing long and tedious operations with the minimum amount of exhaustion to his patients, and executing the work so well as to make it not only useful, but a source of pride to both the patient and operator.

But it was his qualities of heart, more than of mind, that determined his manner and enshrined him among the precious memories of his friends. I have seen him in his own family circle, and it was there that he shone brightest, and with a lustre peculiarly his own. That indefinable aroma of concord and harmony begotten by well-earned love and admiring respect pervaded his household. Every lip was wreathed with a smile of happiness and every eye brightened with pleasure in his presence. It was not merely so with wife and children, but with acquaintances and friends who happened in as visitors. I will not speak of the history of his ambition, and of his effort to avert the fate of an early and untimely death. It was foreshadowed to him, and he struggled with strong hope to attain in other pursuits, and another cli-

mate, that measure of health that would put far away to a riper age the event that must come once to us all; but when the weakness of organization gave way he met the immutable with that same cheerfulness of spirit and hopefulness for the future that so characterized his life. That life, my friends, was not spent in vain, that so inspired those who knew it as to embalm its memory among their sacred treasures, and surround it with the aroma of living thought.

The following resolutions were adopted:

*Whereas*, This Society, since its last meeting, has been informed of the death of one of its members; therefore

*Resolved*, That in the death of A. P. Stevens, D.D.S., of Portsmouth, N. H., the Merrimack Valley Dental Association has lost one of its most valued members and honored ex-presidents; the dental profession one who, though young, had already become distinguished as among the foremost in its ranks; and the community in which he lived a worthy fellow-citizen, a genial gentleman, and a practicing dentist of no common skill and attainments.

*Resolved*, That as fellows of this Association we sincerely mourn his loss, and miss from among us the influence of a presence whose dignified but genial intercourse invited friendship, and whose readiness, intelligence and courtesy in debate commanded our admiration.

*Resolved*, That we extend to his family, in this dispensation of afflictive events, our earnest sympathy; and we most deeply feel how inadequately words can express the meaning of bereavement created by the death of so devoted a husband, so loving a father and so devoted a son.

*Resolved*, That these expressions of our appreciation and sympathy be placed upon the records, and that a copy be transmitted to the family of the deceased and to the Dental Magazines and to the papers of Portsmouth and Dover.

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Virginia Medical Monthly.

We take great pleasure in acknowledging our obligation to the editor of the *Virginia Medical Monthly*, for his cordial response to our request to reproduce Dr. Sims' article on Anæsthesia, which first appeared in his pages, and for the use of his steel plates of Drs. Long and Wells.

We know our readers cannot fail to appreciate these plates, which are portraits, and are also excellent specimens of the engraver's art. We can, also, conscientiously commend the *Virginia Medical Monthly* as one of the best sustained journals that come to our office. It is published monthly in Richmond, Va.

#### **Pennsylvania State Dental Society.**

The ninth annual meeting of this Society will convene at Minequa Springs, Tuesday, July 10th, at ten o'clock A. M.

The essayists and subjects will be announced in the next number of this journal. It is designed to have surgical as well as operative clinics. Dentists having cases suitable for surgical clinics will confer a favor by corresponding with the Executive Committee at once.

The attention of local Societies is directed to the resolution of the State Society requesting such Societies to refer anything new or meritorious to the Executive Committee with a view of bringing it before this Society.

Minequa is forty miles north of Williamsport, on the Allegheny range, a delightfully cool and pleasant summer resort.

The hotel rates to persons attending the Society will not exceed two dollars per day. Ample arrangements are being made for the comfort and accommodation of all who will be present.

Rooms can be secured by addressing W. D. Tyler, Superintendent, Minequa, Pa., or the undersigned. All members of the dental profession from this and other States are invited to be present. Excursion tickets can be secured at all principal points.

G. W. KLUMP, *Chairman Ex. Com.*,  
Williamsport, Pa.

#### **New Jersey State Dental Society.**

There will be a meeting of the New Jersey State Dental Society at Long Branch, July 18th, continuing three days.

The session will be held in the Chapel of the Dutch Reformed Church.

The Ocean House reduces its price to attendants of the meeting to \$3 50 per day. All dentists are cordially invited.

C. A. MEEKER, *Secretary.*

#### **American Dental Association Meeting.**

The Assembly and Committee Rooms for the use of the American Dental Association have been secured in the Grand Pacific Hotel. The hotels named below offer reduced rates to the members, as follows:

Palmer House—regular rates, \$3 to \$5; special, \$2.50 to \$3.\* Grand Pacific—regular rates, \$3 to \$5; special, \$2.50 to \$3.\* Tremont House—regular rates, \$3 to \$4.50; special, \$2 to \$2.50. Sherman House—regular rates, \$3 to \$4.50; special, \$2.50 to \$3.\* Clifton House—regular rates, \$2.50; special, \$2. Matteson House—regular rates, \$2.50; special, \$2 to \$2.50.\*

M. S. DEAN,

*Chairman of Local Com. of Arrangements.*  
Chicago, Ill., June, 1877.

#### **Swindling Dental Assistant— Watch Out!**

Dr. E. A. Bogue tells us of a man calling himself Johnson, and claiming to have spent years in London with Mr. Tomes, and who had gained the sympathy of a number of the leading practitioners of New York, who, on examination by Dr. Bogue, proved himself entirely ignorant of localities with which he must certainly have been acquainted, if his story was not an entire fabrication. Dr. Bogue, having been a guest with Mr. Tomes during the time Johnson claimed to have been at work there, was able to bring to light the falsity of his pretensions. As Johnson (?) seemed only particularly anxious to get to the laboratory and show his skill, knowing that in any event he would not be needed, Dr. B. concluded that he, perhaps, expected when once there to pay himself from the materials on hand.—ED.

\*Prices to which the star is affixed include bathrooms. In all other cases rooms with baths are fifty cents extra.

JOHNSTONS'

# Dental Miscellany.

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VOL. IV.—JULY, 1877.—No. 43.

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## GOLD A TEMPORARY STOPPING.

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By C. M. WRIGHT, D.D.S., Basel, Switzerland.

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In the published transactions of the Mississippi Valley Dental Society, in the April number of the *Dental Register*, page 161, Dr. H. A. Smith, of Cincinnati, a gentleman well and favorably known to the dental profession for many years, a gentleman distinguished for the deep interest he has taken in the advancement of the profession, and for an independent and careful judgment of professional matters, and an accomplished and cultivated operator, makes the following reply to a question on the subject of "Dental Caries: Cause and Prevention": "The main reliance of the profession is filling. *In a vast number of cases it does not meet the requirement.* My observation for the last few years has led me to doubt somewhat the efficacy of mere filling for the prevention of caries. *A great many approximal fillings must be done over many times.* I have kept some statistics, and I think that forty per cent. of the fillings I make are approximate. \* \* \* These bicuspid fillings do not always prevent decay. If they are put in at a period ranging from fourteen to twenty, they have to be done over in a *majority of cases.* We promise too much, etc." The following speaker so far accepted these remarks, that he said: "Any one who has been in practice ten years has seen this very thing." I do not quote these opinions for the purpose of disagreeing with them, but for exactly the contrary reason. If they are true in America, they are

true here on the continent, too, as far as my observation and experience teach me. And yet hour after hour, day after day, we stand or sit, bent over these holes in the human teeth, and sweat and carve and file and chisel and pack gold, and a majority of forty per cent. of our work is temporary. What modest men dentists should be! How humbly they should kneel only to kiss the hem of the garment of Science! How the bowed head and bent back assumed during their daily labor should be made an emblem of their hearts! And yet, how our memories are loaded with the blatant boastings of our brothers! How our ears tingle with the mouthing self-praise of so many of our confrères!

I have felt deeply and often the truth of these remarks above quoted, and have been stimulated to extra pains, to more persistent patience, to more determined efforts, in the struggle for excellence and perfection—and I meet a brother with half my physical vitality, half my experience, who tells me of his grand operations and of their permanence, and in a fatherly way advises me to emulate him. Then, in the still hours of the night, as I lay and meditate on the subject, I think, “Well, if this man is honest and truthful, Nature has denied me the talents necessary to a dentist. Oh! that I could find some other *congenial* employment, in which bread and butter, good clothes, comfortable lodgings, and a little of the cakes and ale of life could be honestly earned.” And sometimes, as I feel that I am too old to begin all over in some other profession, I even wish that I could occupy the position of heir to a great estate. Morning comes and labor begins, and—yes, truly! it is a patient of this talented operator—but alas! the fine operations do not appear. The crown cavities and the fillings in accessible places have been treated in a masterly manner, but the majority of the *forty per cent.* cases are—well, are the cases that *I* must attend to at this sitting. In this little city I have fallen heir to a practice which has been held successively by four excellent dentists for seventeen or eighteen years. One of the four, the first—the lamented Dr. S. C. Putnam, of New York—has passed away, and the other three are still holding first-class positions as operators and dentists in the ranks of the profession, in different cities on the continent.

Daily the operations of the past stare me in the face, and the custom of my predecessors, of giving diagram records to their patients, many of whom present them to me for examination, has been of great interest and advantage to me. Here is a bicuspid, for instance, upon which Nos. 1, 2 and 3 have operated, and which No. 4 has extracted. Here is a six-year molar; No. 1 has left a beautiful crown operation, Nos. 2, 3 and 4 have left their marks, and the present incumbent is curing an abscess,

or trying to—and so on. Is this not enough to make us modest? These were not common operators, but first-class, conscientious and capable dentists, and their work was for the best class of society. Given good quality of teeth, and these operations would, in a vast majority of cases, present what might be called splendid operations. Given the fact that the teeth of this neighborhood are as soft and chalky and irregular, and as liable to the ravages of caries of all the various types, as are the teeth in America, and we have the melancholy truth enunciated by Dr. Smith proved again. “What shall we do to be saved?” is an old question; and on one occasion, when the preacher had nearly exhausted all the inflexions in his elocution in playing upon this question, an old tar who happened to be one of the congregation profanely called out in answer, “Eat salt, d——n you!” But a real authority on the chemistry of the mouth stated, at this same meeting of the Mississippi Valley Association, that salt will not save the teeth; that the tendency of the white and brown variety of caries is greatly increased by the use of salt; that an alkaline condition of the fluids of the mouth is also said not to be a safe condition for the teeth; that eggs, lean meats, onions, etc., when the black variety exists, should be avoided, etc. But what can we, as dentists, do? We cannot direct the diet of patients any easier than can the family physician. We are compelled to fight with excavators and pluggers. We are compelled to be mechanics. We are compelled to acknowledge the superior power of the enemy, and simply watch and pray and stop the little encroachments as well as we can; and when, finally, the battle is won by the enemy, we must have a convenient conscience, and smilingly acknowledge defeat, but have confidence in the good intentions of our profession and of our own labors.

There is in Paris an American dentist, who, it is said, by his agreeable manners and an aristocratic title, has such perfect control over his patients, that they believe that the teeth that are this year filled with gold, may next year be filled with gutta-percha, and the next year, again, be extracted, and replaced by porcelain ones. I heard a half dozen dentists laughing at this idea last summer in Paris, as they sat in the court of the Grand Hotel, sipping cool drinks and smoking Havanas; and I must acknowledge that I laughed too. It was a novel idea. But later reflection has taken the joke all out of it, and I have seriously asked if this dentist is not wiser than his generation? Would it not be better if patients were taught to believe that our operations are only temporary; that disease is stronger than our skill; that only constant vigilance can avail at all; and that while we stay the hand of the destroyer by our

skill, he will in all probability beat us in the end? Then when we do save for a life-time an entire denture composed of delicate teeth, what credit we should receive! No other learned profession claims to do as much as we do in our line. The physician cannot tell surely the length of life a sick man may have. The lawyer only agrees to do the best he can toward success for his client. The professor cannot make his students absorb knowledge, and would not think of guaranteeing to do so. The architect—among the mechanical professions, it is true—is held responsible if his house or bridge falls down; but not if it is struck by lightning or falls in an earthquake. The dentist, however, meets the disapproving looks of his patient if a filling in a bicuspid fails, and yet “they have to be done over in a majority of cases.”

Professor Taft, of Cincinnati, once said, “I don’t want to hear of men’s failures; we all have enough of them. I want to hear of their successes, etc.” But as this was some ten or twelve years ago, perhaps it would be good to have a good season of failures—of acknowledged failures—and perhaps after awhile the question of “What may our patients reasonably expect from our services?” will be so thoroughly set at rest, that our *status* can be assured. Perhaps we shall have the courage to teach our patients that caries and disease have not yet been conquered by science and skill; but that with their co-operation, and by quarterly or monthly examinations by the dentist, even bad cases may be conquered *for a time*, and splendid teeth may be kept good till old age comes, in spite of the luxuries of civilization. Perhaps we ourselves may learn that gold is a material used as a *temporary filling* by dentists, excepting in teeth of excellent quality and in favorable positions, when it *may be* considered permanent.

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## VALEDICTORY, AT THE COMMENCEMENT EXERCISES OF THE MARYLAND DENTAL COLLEGE.

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By A. W. Ross, D.D.S.

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LADIES AND GENTLEMEN : Having been honored with the position of valedictorian, it becomes my duty, as the representative of the graduating class, to give utterance to the parting word which severs the peculiar relations heretofore existing between them and the respected Professors of the Maryland Dental College, and brings to a close the pleasant in-

tercourse we have enjoyed with the wit, beauty and hospitality of Baltimore City.

I speak the sober truth, and I give utterance to the united voice of my classmates, when I say that our sojourn among you has been exceedingly pleasant; and though the stern affairs of life call us to distant portions of this great country, thereby shattering the ties that bind us here, still, the rosy fragrance of sweet reminiscence shall live in memory so long as this heart shall beat or reason hold her sway.

If, in my endeavor to give expression to the sentiments of my class towards your city, the language should seem extravagant, attribute it to *enthusiasm*, and *not a purpose to flatter*, on the part of your humble servant.

As a people, you are the possessors of a great deal that should create a just and laudable pride. Your epithet is a noble one—"Monumental City"—signifying the great respect and admiration cherished for the sacred past and the honored dead! and exhibiting to the world in lights that cannot fade—in massive structures that cannot perish, your high appreciation of Patriotism, Honor, Virtue, Liberty, Science and Art.

Already the reputation of your educational system is recognized and admired by the civilized world, and by your liberality, hospitality, courtesy and kindness to the stranger, the poor, the suffering and the insane, you have attained a position, the mere mention of which, viz.—"I am a Baltimorean"—entitles you to credit and serves as a passport throughout this broad land.

Your numerous churches are not surpassed by any of the cities of this union for the purity and fervency of pulpit eloquence emanating therefrom.

Your condition financially is healthy, as is attested by your \$17,000,000 of imports and \$40,000,000 of exports per annum.

Your commerce is increasing, as may be seen by a glance at the heaving bosom of the famous Chesapeake, as she proudly floats her hundred vessels freighted with divers precious wares to distant ports; whilst the epicurean palate of Europe welcomes with beaming eyes and gladsome hearts the terrapin, the canvas-back duck, the pheasant, and last, but not least, the inimitable Maryland oyster.

Your market is universally conceded to be among the best in the world, and you know how to prepare it for the table, and you know what to do with it when prepared; and it is to this we must, in a great measure, ascribe the robust health, the buoyant spirits, the sparkling eyes, the symmetrical form, the elastic step and the rosy youth that we meet with, even in comparative old age, on your streets. Truly with pro-

priety you can repeat the famous blessing of Robert Burns : "Some hae meat and canna eat, and some wad eat that want it; but we hae meat and we can eat, and so the Lord be thankit." We cannot stop to speak of the good, the true and the beautiful of your city, which means shade-trees, fruits, flowers, *woman*, and the Christian graces of faith, hope and charity ; but we will just single out the greatest sweet, the rarest blessing, the essence, the extract, the cream—the last and best of God's creation—*woman*.

Oh ! the ecstasy, the solace, the inexpressible volumes couched in the name of sister, mother, wife. What is a family without a mother (or a big sister) ? A hornet's nest, a den of wolves. What would be the church without woman ? A deserted place. What would be society without her softening influence ? Nothing more nor less than pandemonium. What would be the world without her ? A howling waste of bats and owls and snakes and wolves. What would be this valedictory or this commencement without her ? A bird without song, a ship without sails—a melancholy failure.

I would like to compliment the ladies of Baltimore *directly*, but I am afraid, and hence will try an indirect one. I can see why a man would refuse to take his seat on a pine plank and ride over the rushing billows of the Niagara Falls—I can appreciate the motive which prompts one to avoid castor-oil and jalap—I can understand why he would refuse to take hold of a lightning-rod during the prevalence of a severe thunder-storm ; and I can even comprehend, to some extent, how he might, under the conglomerate influence of enthusiasm, romance and general nonsense, procure the consent of his mental organization to bestride the forked lightnings and be ejaculated into the hyperborean regions of infinite space ; but I can neither see, imagine, approve, comprehend, appreciate or understand how it is *possible* that a man *can be* an old bachelor in Baltimore City.

Ladies and Gentlemen : Your humble servant hails from South Carolina. Then allow me, in the name of my State, to thank the people of Maryland—especially of Baltimore—for that great, generous, comforting sympathy, as well as more substantial help, which you have always so cordially extended to us in our day of trouble. And allow me to express the pride and pleasure I feel in this honored opportunity of addressing a people whose hearts beat in unison with the people of my country, and hence, who feel, to me, like *friends*, and not strangers. Thanking you for your hospitality, your kindness and your courtesy, and leaving with you *all* of our good wishes, we bid you adieu.

Gentlemen of the Faculty : The fullness of time is now at hand,

when we must lay aside our swaddling clothes as students, and, donning the uniform and insignia of the D. D. S., proclaim ourselves your disciples in Dental Ethics, and if we would prove worthy of the teaching we have received, array ourselves in the grand army of those who are reaching after *truth* for the adornment and exaltation of our profession, thus qualifying us for the accomplishment of the great ends of our calling, viz.: The alleviation of the sufferings of humanity, the obliteration of deformity, the restoration of lost beauty, and the preservation of the comely parts already in our possession.

You have labored patiently and assiduously for the welfare of this class, holding up Dentistry in its true light, and showing the close relation in which it stands to Anatomy, Physiology, Chemistry, Therapeutics and Materia Medica. If we have failed to comprehend the chemical compositions, the anatomical structure and physiological functions of the teeth, and their connection with the vegetative and animal functions of the body, then it is not your fault, but our misfortune. I am happy to see that the members of the Baltimore Dental Society give their decided preference and support to the Maryland Dental College. Nor is this all. It gives me pleasure to state further that the Dental Association of this State and the District of Columbia unanimously endorse this institution.

And still further, it is evident that the great dental practitioners—the great lights of the profession in the different States of the Union—are watching with interest and increasing zeal this youngest of all the dental colleges, as being the “new departure” which is destined to lift Dentistry out of the old ruts, and place it high in the list among the honored and learned professions.

And without casting insinuations at any other dental institution, permit me to add, it has been my fortune to matriculate in three dental colleges; and my testimony is, that the Maryland Dental College rides no hobbies—pins its faith to no dogmas, but teaches all acknowledged plans—all accepted theories, subjecting them, however, to the crucial test of manipulative experiment and scrutinizing investigation.

Gentlemen of the Faculty and Board of Regents: As the representative of my class, I now offer our hearty thanks for the knowledge we have received at your hands, and for the courtesy and kind consideration which you have always extended to us. Hoping that you may all live to see the Maryland Dental College triumph over all obstacles, and, as she deserves, take her place among the first schools of learning; and hoping it may be the happy lot of many of us to meet you again when our Alma

Mater shall have put on her mature robes of dignity and honor, I now say—farewell.

Fellow Classmates : The time has arrived when we must *part*, and though the pang be bitter, we *must* give the last hearty shake of the hand, the last Godspeed, and pronounce that sorrowing word—farewell. Then let us, each one of us, endeavor so to live, that, should we never meet again on the shores of Time, we may meet beyond the river, where there shall be no more use for pluggers and excavators and drills and forceps and toothache and abscesses and toothless mouths ; and where all shall be bright and perfect and happy, and where *none* shall say, “ I am sick.”

Our intercourse has been pleasant, and our intercommunion, I trust, edifying. Our lot thus far has been a common one ; but now we separate, and each for himself must buckle on the armor and fight the battle of life, and if he would attain the prize, take to himself the shield, the sword, the helmet and the breastplate of truth, honor, courage, self-denial and perseverance.

You have drank at the fountain of knowledge and partaken of the feast prepared by the accumulated exertion of those who have lived before you. Then tell me not that any member of the Maryland Dental College of the graduating class of '77 is willing to suck the pap prepared by others, then quietly lay him down to sleep.

A stern duty rests upon you, a prescribed task lies before you. Then address yourselves to it like men, and in your day and generation raise Dentistry higher than you found it, as did your predecessors. The march of events, the progress of civilization and learning, call for advancement in Dentistry, which can only be effected by patient investigation and enlightened exertion.

The great, characteristic feature of the nineteenth century is *Progress*. We see it written in living letters on Science, Art and all the professions ; and I am happy to say that Dentistry has not only kept pace with all in this grand feature, but has actually *excelled* all other professions and callings.

You have gone through an extensive course of study, and you commence the practice of your profession with advantages which were not attainable by your predecessors in Dentistry.

You have been taught the anatomy of the various organs which constitute the wonderful structure of man, as well as the physiological force that moves this complex mechanism in such harmony and beauty.

Thus enlightened, you are able to diagnose the pathological conditions,

and appreciate the importance of the organs with which you have to deal, recognizing the responsibility that rests upon you, in the performance of all operations that come within the scope of your specialty.

Then may we not, with propriety, indulge the hope that, in the class of '77, there is more than one who possesses the virtue, the perseverance and the brains to reflect honor on his Alma Mater and add dignity to his profession, both by practical invention and intellectual contribution?

In conclusion, let me say—strive to show by your deportment and by your labors, that a diploma from the Maryland Dental College is equivalent to a guarantee of ability and integrity. And under *no circumstances* permit the honor and dignity of your profession to be soiled by the influence of the almighty dollar.

Avoid that smallness of soul, that pusillanimity of thought, that ignoble love of gain, which will surely and eventually fasten your eyes on a ten cent piece, at the sacrifice of honor, self-respect and public opinion. Be honorable, courageous, generous, firm, self-denying, truthful and persevering; and you will find, as you traverse the path of life, its mountainous obstacles will dwindle into insignificant mole-hills, its discouraging difficulties into moonshine; whilst, by the efforts put forth in the resistance of temptation and the performance of duty, your manhood will be so developed and strengthened, that the burdens of life will seem light, and its temptations as nothing.

Endeavor to be good citizens, good dentists, good husbands and good men. Then you will have lived to some purpose; having honored your country, contributed to the happiness of society, and served the God that gave you being.—Farewell.

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## ON IRREGULAR AND DEFECTIVE TOOTH DEVELOPMENT.

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By HENRY MOON.

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MR. PRESIDENT AND GENTLEMEN: The subject that comes before us this evening has received attention from such able investigators that it has become difficult to say anything new about it that is also true. On this account I should have brought under the notice of this Society, through "Casual Communications," some interesting specimens that I have here, had it not seemed to me that, though a paper might contain no novelties, yet, by inviting discussion, and perhaps by leading to con-

certed observation among us, it might serve to more clearly establish some truths and clear up some doubtful points in Odontology.

Under the title of "Irregular and Defective Tooth-formation" I propose to consider two classes of cases, each of practical interest from a surgical or medical point of view. Under the one class I will range and glance at those cases in which excessive or erratic development has resulted in either the formation of supernumerary teeth or in the abnormal developments known as Odontomes; and under the second class those vagaries of tooth-formation which result in deficient size or defective form of any of the normal series of teeth.

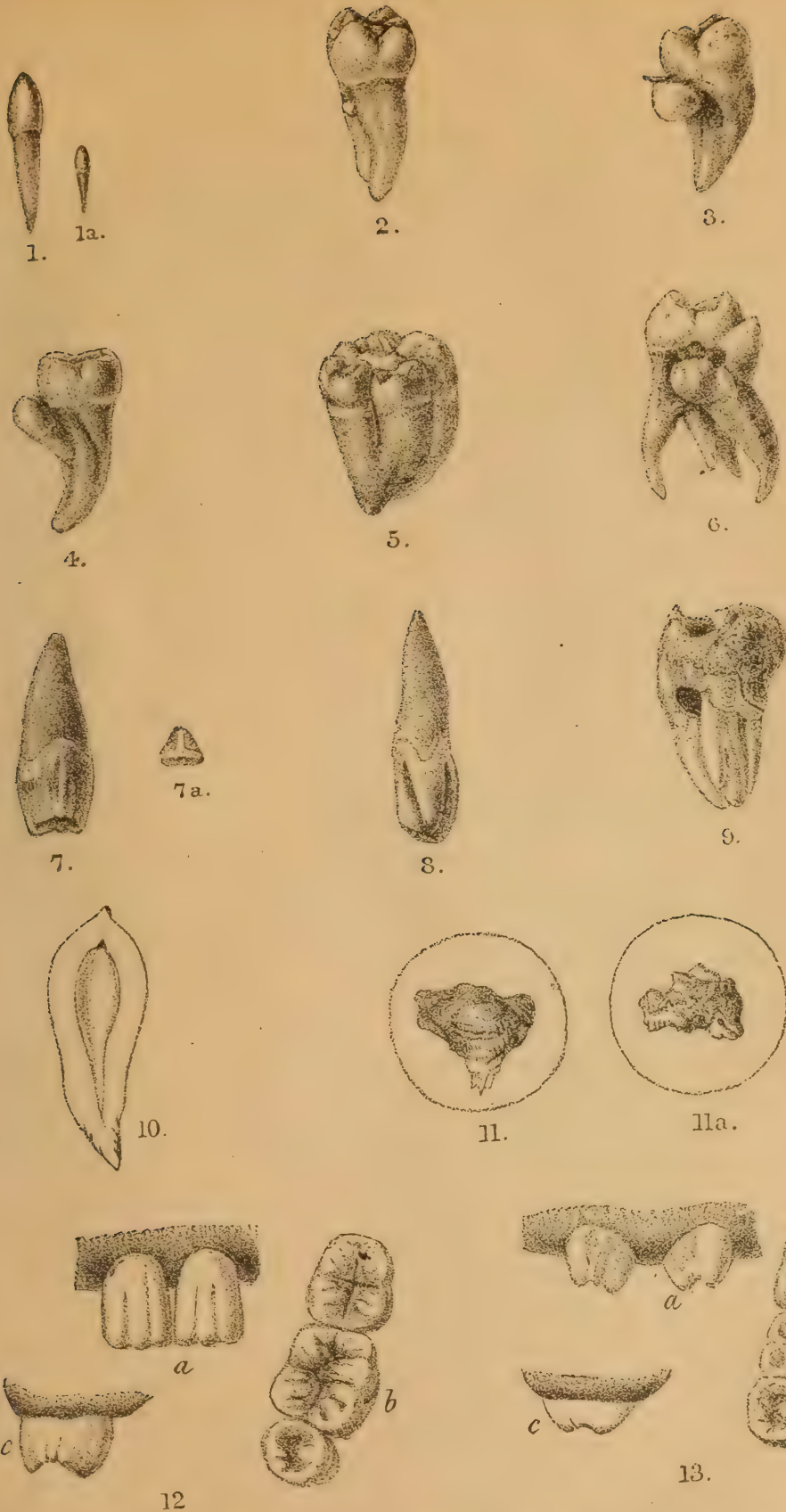
It has appeared to me that these dental irregularities of excess and defect might have light thrown on them by being considered together with what may be called the normal architecture of the teeth.

The fact that the crowns of human teeth are formed around a single dentinal system, seems to have prevented the full recognition of this. I believe, other fact—viz., that the variety of form in the several classes of teeth (fitting them for the office which they have respectively to perform) is due to a multiplication and modification of a simple and elementary tooth-form. These elementary forms appear to *re-assert their autonomy* under disturbed conditions of development. One of these denticles is shown to us separate in the most common and simple supernumeraries, consisting of conical crown and tap-root. (Pl. IV., figs. 1 and 1a.)

Viewing the labial surface of unworn, well-formed upper front teeth in man, we see in the Incisor—by the three tubercles on its cutting edge, and sometimes by two vertical lines or slight depressions on its face—that three lobes or columns of equal size go to build it up; while on looking at the Canine we see the central lobe of its labial surface magnified, while the side ones are reduced. On the lingual surface of the incisors sometimes a central cusp, sometimes two side cusps, are more pronounced.

The form of the bicuspid shows the more even development of the lobes on its buccal and lingual aspects, while the molars (speaking very broadly) duplicate the pre-molars.

I might point to comparative dental anatomy to support the theory of a tendency to the separate development of denticles before they blend, *e. g.*, to the distinct plates in the molars of the capybara—to the molars of the elephant, with its transverse plates of dentine (which are probably each built up of many denticles, giving to it, by their conical points, its mamillated character), and which plates remain distinct for a time, but unite to form a common pulp-cavity; and also to the molar of the



Figs. 1 and 1a. Separate Denticles of the simplest form.—Figs. 2, 3 and 4. Denticles united with teeth.—Fig. 5. Two Supernumeraries of bicuspid form in complete union with a lower wisdom-tooth.—Fig. 6. A two-cusped Supernumerary, blending at one point with a molar.—Fig. 7. Lingual surface of a so-called cubic tooth.—Fig. 7a. A T-shaped temporary Incisor, viewed from its cutting edge.—Figs. 8 and 9. Two specimens from the same mouth, consisting of irregularly-bundled-together denticles, which held the place of upper incisors. In Fig. 10 the root expands into a radicular odontome.—Fig. 10. Radicular Odontome of simplest form, resulting from hypertrophied dilated condition of root. The position held by this tooth in the mouth is shown in Fig. 1, Plate V.—Figs. 11 and 11a. Two Odontomes, which were the representatives of an absent lateral incisor and a canine, and gave rise to two distinct dentigerous cysts.—Figs. 12 and 13. A slightly diagrammatic representation of the differences between normally-formed teeth and those that are malformed through inherited syphilis: *a*, upper incisors; *b*, first lower molar; *c*, first upper molar, viewed from mesial aspect.

mastodon, transitional as this is in character, towards the elephant's molar, as pointed out by Mr. Charles Tomes, in his recent work on "Dental Anatomy." However, confining our attention to human teeth, the cases which we shall consider will, I think, show that the prominent points of the dentinal pulp first to be capped with dentine are liable to individual modifications as to form ; while the fact that partially distinct denticles sometimes group themselves as the lobes are seen to be arranged in a normal tooth, gives a significance to such arrangement, and, at the same time, points to a source of derivation for denticles which are developed separately. A fact which I observed a week or two ago will enable any one to easily satisfy himself as to the architectural nature of the incisor.

In the case of patients who possess transparent enamel, it will be found easy to see by transmitted light the outline of the dentine within. In some cases (and in the first case I noticed it was strikingly marked) the dentine of ivory-like color showed through the pearl-like enamel in three separate circular-topped columns, which remained distinct for some little distance ; in a second case, where, in place of the central tubercle of enamel, two smaller tubercles were present, I could distinctly see the corresponding division in the points of dentine. In others, the cutting edge of dentine presented an unserrated line. Individual denticles vary greatly in size, and under unusual conditions of growth would naturally be particularly prone to erratic development. To these causes I should be inclined to refer the eccentricities in form of supernumerary teeth, and of some odontomes.

A remarkable case, reported and figured in Tomes's "Dental Surgery," tends, I think, strongly to support the view I have advanced. A cyst containing twenty-eight or more separate dental formations (some of which were single denticles, while others consisted of an aggregation of these elementary forms) occupied the place of the absent canine, bicuspid, and molar. Some specimens of erratic and excessive dental development I have had here figured (Pl. IV.), that I may direct your attention to them *seriatim* as illustrations of my remarks.

As, however, I find that my paper would extend to most inordinate length if I entered on the discussion of these specimens generally, I will only refer to those that bear on the question of individual denticular development, and leave the consideration of odontomes for another occasion, which I hope may be provided by my friend, Mr. Charles Tomes, giving us the results of his investigations into the nature of a radicular odontome, of which he has recently made a section.

In Plate IV. Fig. 1 represents the simplest and common form of supernumerary; in fact, a denticle or most elementary tooth-formation. The enamel in such a conical tooth ceases all round the neck at an equal distance from the apex of the crown; in other words, by a line free from undulations.

Fig. 1a is a smaller denticle of the simplest form.

Fig. 2 (taken from Specimen No. 374 in the museum of the Society) shows an enamel nodule attached to a molar at the point corresponding to the bifurcation of its roots. Mr. Salter has ranked such a nodule among odontomes, and has shown that it consists of enamel thickly capping a cone of dentine, and is, in reality, a submerged cusp, which, to my mind, means a denticle developed in an unusual situation, perhaps to be explained by the mutual attraction which enamel and dentine seem to have for one another.

Fig. 3 represents another specimen from the museum (No. 373). In this, apparently, a large cusp of a supernumerary tooth is attached to a molar, at the neck of the latter. The frequency of the occurrence of this junction at the neck of the tooth, or at the bifurcation of the roots, suggests that a cessation of the tooth-sac, as such, at this point, has something to do with such localization.

Fig. 4, also taken from a specimen in the museum, shows a small supernumerary tooth or denticle attached to, and doubtless blended with, a molar.

This gemination of teeth involves a commingling of the dentine of the united teeth; and, looking at this specimen, at the two last-mentioned, and at the next to be noticed, it seems hard to draw a line between them, and to say one is an odontome and the others are geminated teeth: the same remarks may possibly apply to some of the projecting masses which have been called coronary odontomes.

Fig. 5 represents a lower wisdom, with two supernumerary teeth of true bicuspid form blended with it. It was extracted under chloroform by me, at Guy's, from a man who was suffering from chronic spasm of the masseter, and from local suppurative inflammation set up by this triplet's presence, and its ineffectual attempts at complete eruption. This man had the largest teeth I have ever seen. He was not particularly hirsute. The specimen tells its own formative history.

Fig. 6 shows a two-cusped supernumerary that blends with the lower part of the crown of an upper molar, and then, bending on itself, develops its root in a bold outward curve. Instances of the development and perfect blending of an extra half-cusp on the buccal and lingual surfaces

of upper molars are familiar to us all, and also, probably, the flattened form of the small separated supernumerary sometimes found in these positions. (Specimens shown.) Supplemental teeth, undistinguishable from the normal incisors and canines, are, as we know, developed in the front of the mouth sometimes, and a pair of teeth called cubic, occasionally behind the incisors.

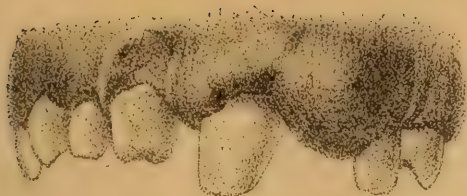
Fig. 7.—The characteristic difference of these so-called cubic teeth from the normal incisors is seen to be a flattening of the labial surface, together with the greater vertical development of the lingual lobes, approximating the masticatory surface to that of a bicuspid; and, remarkably enough, we sometimes find in them a greater development of the central lingual denticle or cusp, and sometimes of the two lateral ones; thus increasing the likeness, in the one case, to a first, and in the other to a second lower pre-molar. The breaking up of these teeth into their elementary forms may account for the numerous separate supernumeraries of simpler form occasionally met with in the incisive region. (Model shown of a case.)

Fig. 7a.—A temporary tooth extracted by myself, showing the T form noticed by Mr. Tomes in writing of the various forms that supernumeraries take, its peculiar form being the result of the abnormal development of its lingual central cusp.

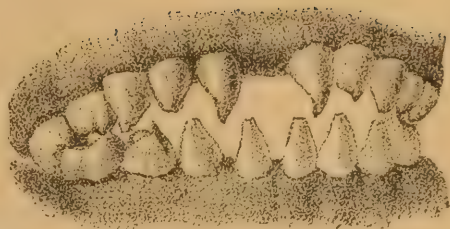
Figs. 8 and 9 are from specimens kindly lent me by my friend Mr. Pedley, of Guy's. They were extracted by Mr. Pedley, senior, and held the place of upper central incisors. The separate denticles forming the crown are in both specimens bundled together without any traceable order, and in one specimen the compound root has spread out into a radicular odontome.

Fig. 10 represents in vertical section a radicular odontome of the simplest kind, produced by a general axial dilatation of the pulp of the root. This case, I believe a unique one, is exactly described by the name of "hypertrophied dilated tooth-fang." An uncalcified pulp occupied the largely-expanded pulp-chamber, which terminated in a very large foramen, protected by a cowl-like projection. The case has been reported by Mr. Salter in the Guy's Hospital Reports for 1876, and I will only very briefly touch on its main features. The boy, æt. 11, from whose mouth the tooth was removed, came into Guy's under the care of Mr. Bryant. He had for about three years noticed a swelling in the front of the upper jaw, but had suffered no pain from it. The tumor figured in Plate V., fig. I, was red, soft, and had a slight tendency to bleed. It looked like an epulis; the downward projection of the left

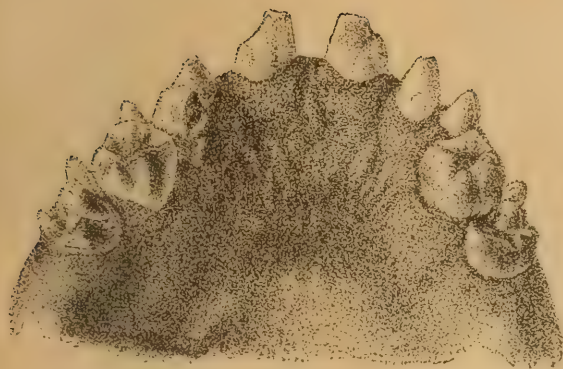
PLATE V.



1.



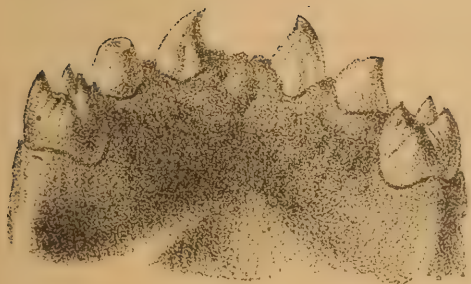
2.



3.



3a.



4.



5.

Fig. 1 shows tumor produced by the hypertrophied dilated tooth-root, shown in Fig. 11, Plate IV. The central incisors have crowns of slightly-marked syphilitic form.—Fig. 2 represents the teeth of E. W., æt. 11.—Figs. 3 and 3a represent the teeth of R. W., æt. 15; sharp points have been filed off the upper central incisors, and the temporary molars are being succeeded by single-cusped pre-molars.—Fig. 4 represents the teeth of Thomas B. at the age of nine. A possibility of syphilitic history is attached to this case.—Fig. 5 represents the upper teeth of C. L. S., æt. 16, and shows one central incisor of perfect form, and the other of typical syphilitic shape. See Paper with reference to teeth of other members of family.

central incisor and its separation from the lateral, being, however, marked features. The form of the crown of the central incisor led me to suspect inherited syphilis, and though no history of it could be obtained from the parents, and the boy presented no other sign, his elder sister had become deaf, and had suffered in sight from inflammation of syphilitic origin.

Before leaving this part of our subject, I would say that perhaps some light may be thrown upon the formation and direction of normal tooth-roots by the theory of tooth architecture advanced, while the singleness of the roots of compound supernumeraries may be partly explained by the fact that they are intruders in the jaw, and, consequently, have stinted accommodation for their implantation.

Figs. 11 and 11a.—The tendency of the dentine and its pulp to break up into smaller dentinal systems under disturbed conditions of development may help to explain also the structure of coronary odontomes. The two small odontomes here figured represent a lateral incisor and a canine, and gave rise to two distinct dentigerous cysts. They were extracted by Mr. Cooper Forster, at Guy's, from the mouth of a girl *æt.* 13, and were found by Mr. Salter to consist of enamel dipping down between dentine, as figured by Heider and Wedl in their Atlas.

We now pass to the consideration of some cases in which the teeth present great peculiarity of form produced by a remarkable development of the central cusp or denticle, and a diminution or suppression of the others.

At the end of last year, my friend Mr. Bell (our late house-surgeon at the Dental Hospital) brought to my notice the case of the child Emma W., *æt.* 11, a model of whose teeth, taken at that time by Mr. Bell, I hand to you. This child, one of eleven, is of fair complexion; her hair short, fine, and scanty, used to come out. Her eyes, of gray color, are remarkably small, and the sight of the left eye has been defective from birth. Mr. Hutchinson, who has kindly examined her eyes, will, I hope, tell us what defect he found in them. These more recent models, taken after the lapse of several months (Pl. V., fig. 2), show an elongation of the central incisors, making their hooked character more apparent. Being informed that the eldest sister of this child had also peculiar teeth, I paid a visit to her mother's house at Harrow, and the following are some of the facts in the family history:—The father, at the age of 36, died last year, it is supposed of consumption. The mother, a tall, good-looking woman, whose remaining teeth (she had lost a good

many) show no peculiarity, believes that her late husband's incisor teeth were pointed, and that he only had two upper incisors. Of the eleven children, two have recently died, apparently from phthisis.

The eldest of the family, Ruth W., æt. 15, a well-grown, rather good-looking girl, bears in general features a strong likeness to her sister Emma; her complexion is fair; the hair on the scalp is short and rather scanty, but very fine fair hairs are developed on temples and cheeks in more than usual number. Her eyes, of gray color, used to become bloodshot. The models of her teeth are here (see figs. 3 and 3a, Pl. V.). She has only changed one lower tooth, an incisor. It will be noticed also that the temporary molars are being succeeded by pre-molars in form of a simple (curved) cone. Her central upper incisors had the middle cusp considerably prolonged, but just before my seeing her she had filed it down to a level with the one on the mesial side.

Great dissimilarity exists among the children of this family. The eldest boy, who takes after his mother, is a dark, handsome lad, with a remarkably well-developed set of teeth.

Another sister, Alice, æt. 10, a very small child for her age, is not so fair as, and does not strongly resemble, her elder sisters. As will be seen in this model (model shown) her upper permanent central incisors are slightly abnormal, the central tubercle being represented by two small tubercles, which project beyond the level of the lateral ones. Her temporary upper incisors were pointed; her left eye (the lids, I am not sure about the pupil,) is at least a third smaller than the right one, which is small also; her eyes are weak.

On seeing the teeth of these children I was struck with their similarity to those of a boy whom I had seen, between six and seven years ago, at the Islington Dispensary. This is the model of his upper jaw, taken by my friend Mr. Scully, and the following were my notes taken at the time:—"Thomas B., æt. two years and nine months, an undersized child. Is he the subject of constitutional syphilis? Is hydrocephalic. Fontanelles but just closed. Hair absent for first year. Cut incisors at ten months of age, and molars appeared six weeks back. No teeth or signs of them in lower jaw. *Family History*:—Mother has been married five or six years. Had first child ten months after marriage. It had the same constitutional taint, was hydrocephalic, and died at sixteen months of age, without teeth."

I have lately succeeded in finding this boy again, and the further facts obtained relative to him and his family are of interest.

Thomas B. had no toe or finger nails at birth. In infancy had snuf-

fles (?), or sniffed in the same way as at present, and was sometimes nearly suffocated. When nine months old he had eczema (?) on scalp, and abscesses at back of head. He has twitchings of facial muscles, and has been threatened with chorea. Mother and neighbors say that he suffers intensely from hot weather, that he does not perspire (another canine characteristic), and that the veins stand out on the temples of his hydrocephalic head alarmingly. He has now on scalp more hair of light chestnut color, but it is still scanty. No eyebrows, very small eyelashes, and small eyes. (A hard growth—a node—the size of a small cherry, is to be felt at the junction of one of his ribs with its cartilage.) He is now nine years and two months old, and is small for his age. As will be seen by these models (models shown), he has cut four temporary canines, has changed his upper central incisors for two longer and yet more re curved and pointed teeth, and his only two molars, which are upper temporary ones, have their more prominent cusps long, pointed and hooked. (See fig. 4, Pl. V.)

*Family History* :—The father is said to be a healthy man, and to have good teeth. The mother, a small pale woman, with dark brown hair, has her left upper lateral incisor somewhat peculiarly shaped, and conical, has never had right upper lateral ; she says, to all appearance truthfully, that she has never had first lower molars, no second bicuspid in either jaw, nor wisdom teeth.

The next child to Thomas, a pretty, dark little girl of eight, has conical lower central incisors, while her one erupted permanent upper central incisor is normal in shape, but has the three tubercles on its cutting edge particularly strongly marked. The next child, a boy, died at sixteen months, and was said to have teeth and hair normal. The next, a boy, was stillborn. The next, a girl, eighteen months old, has teeth normal, and hair curly and plentiful.

In the cases just related, the peculiarity of tooth-form appears referable to a lowered degree in the scale of development, which is shared in by the other dermal appendages. If further investigations as to the cause of these malformations in the case of Thomas B. go to show that they are not in any way due to syphilis, a noteworthy fact appears for diagnostic purposes ; for, in comparing these teeth with such as are more or less pointed through inherited syphilis, it is seen that in the teeth we have been considering the central cusps of the incisors and the prominent cusps of the molars are more pronounced than usual, while in the syphilitic tooth (about to be noticed) we find the exactly opposite condition to prevail.

We now pass to the consideration of the peculiarity in the form of the teeth which is indicative of inherited syphilis, and also to the consideration of the causes which induce the honeycombed condition of tooth-enamel.

It is now about twenty years since Mr. Hutchinson (in papers read before the Pathological Society and before this Society) published his views on the influence exerted by inherited syphilis upon the teeth. Knowing how many able men, who certainly are not accustomed to accept theories in pathology without investigating them, consider Mr. Hutchinson's views, in the main, as established beyond cavil, it was with considerable surprise that I read last year, in a report of a discussion which took place elsewhere (under your presidency, sir), that several gentlemen expressed doubts as to the diagnostic value of the tooth-malformation in question. My observations on this subject extend over some twelve years, and include some hundred cases ; and although in some details as to the manner of causation I may differ from the view published by Mr. Hutchinson (before knowledge on tooth-development was advanced as it is at present), yet I must coincide entirely with his general conclusions, and greatly admire the manner in which they were formed from carefully accumulated evidence, gathered, as few could gather it, from exact knowledge of special branches of surgery.

Mr. Coleman, who worked with Mr. Hutchinson in his original investigations, and who, from his connection with a large hospital, has had abundant opportunities of verifying his original opinions, said, on the occasion referred to, that he believed these peculiarly-formed teeth were almost invariably connected with syphilis, "though he fancied he had seen one or two exceptions, viz., in families where the elder children presented no symptoms of the disease at all, whilst the third or fourth child showed the typical teeth, and those subsequently born presented no sign of specific disease." With regard to these doubts, it might be that the elder children were born before their parent contracted syphilis, and that before the birth of the younger ones the disease had expended itself, or, at all events, was in abeyance.

The following instructive case bearing on this point was met with by me at Guy's. These models of it (see fig. 5, Pl. V.) show one upper central incisor to be perfectly well-formed, the other to be a typical syphilitic tooth ; the first molars to be characteristically affected, and the lower incisors narrowed, and showing evidence of obliterated notching.

The notes of the case, taken at the time, are as follows :—

"Charles L. S., æt. 16 ; white, pasty complexion ; depressed bridge

of nose ; had snuffles in infancy, corneitis five months ago. *Family History* :—Six brothers and sisters ; next brother, æt. 14, has same complexion as Charles, has no bridge to nose, and suffers from headaches, for which he is attending at Guy's. His teeth are perfect in form. The next brother, æt. 11, has marked syphilitic teeth."

In the discussion alluded to one surgeon—a high authority on syphilis—is reported to have used words to the effect that, because syphilis produced many symptoms that were also produced by other causes, therefore teeth showing this particular defect could not be held as diagnostic of syphilis.

*Now the question really is this*—Is there one peculiar conformation of the teeth due to inherited syphilis and not produced by any other cause ? The evidence in favor of an affirmative answer to this question appears to me so strong that I think the onus of disproof rests with the skeptics. A doubt as to the diagnostic value of these teeth can only be raised by the bringing forward of cases, or the models of cases (showing the typical syphilitic teeth), accompanied by conclusive evidence of the non-inheritance of syphilis.

I believe that, to a great extent, the doubts which exist on the subject are due to a vagueness of knowledge as to what typical syphilitic teeth are like, and to their being confused with teeth which simply show a defect in enamel, whether produced by mercury or otherwise.

A grave responsibility rests with any one who acts on a half-knowledge in this matter, as mistrust may be unjustifiably sown in families by unwarrantable inquiries ; and patients likewise may benefit or suffer in proportion to the thorough knowledge of it possessed by their medical adviser.

A careful study of the plates Mr. Hutchinson has published, or the study of the mouths of patients who have undoubtedly inherited syphilis, will, I believe, establish the following facts, viz. :—That syphilitic teeth are seen in their most typical form when they have been developed free from the influence of mercury ; that in such teeth the enamel, to all appearance, is evenly developed over the dentine (in a great many cases it may be less thick than normal over the point of the central lobe in the incisor and absent from a limited area on the masticatory surface of the first molars, but I am not sure mercury has not been administered in such cases). Where the enamel is evenly developed, the tooth is not affected as to color. As originally observed by Mr. Coleman, the affected teeth are almost invariably dwarfed, the distal edges of the upper central incisors are turned

outwards, and in the front of the mouth the alveolar portion of the upper jaw is deficient in vertical development.

When the upper incisors are of typical form, I believe it is exceedingly rare for the lower incisors to be altogether unaffected, and the first permanent molars are exceedingly prone to be smaller and more dome-shaped than usual. (Compare figs. 12 and 13 in Pl. IV.) My impression is, that it will be found that syphilis acquired shortly after birth may confer on the teeth that are later formed than the incisors a characteristic form, while the incisors escape, and that thus the deformity is not necessarily due to heredity.

A remarkably interesting case that my friend Mr. Ackery has taken models and notes of may throw light on this question.

I have not made a section of a well-marked typical syphilitic front tooth, not having met with one that I felt justified in extracting; but, judging from their external form only, I believe their peculiar shape results from a stunted development of the first-formed portion of dentine,—in other words, a dwarfing of the cusps; and that the single central notch on their cutting edge is due to a greater diminution in the size of the central lobe than in that of the lateral lobes.

The lesser width of the first-formed part of the crown, as compared with the later-formed portion, the most distinctive feature of these teeth, is explainable in the same manner.

Two years back Mr. Hutchinson read a paper at the Pathological Society, on “Lamellar Cataract and Imperfect Teeth,” and expressed the opinion that the honeycombed condition of the teeth was, in a large number of cases, produced by the administration of mercury in infancy. My observations on the subject did not lead me to the same conclusions until I found that Stedman’s powders contained calomel. When I became aware of that fact, the cases I have noticed, both in private and hospital practice, lead me to agree with Mr. Hutchinson, that, in a large number of cases, mercury (in some form or other) administered in infancy, is the cause of this faulty development of the enamel of the teeth.

Mercury may be a necessary medicine for a child when suffering from some complaints; but it is certainly desirable that the effect it may exert on the teeth should be recognized by us and by the public, if Mr. Hutchinson’s views, with which I quite coincide, are borne out by further observation. To, unnecessarily, give teething powders which may ruin the teeth is certainly not desirable.

Various opinions are held as to the cause of this enamel defect. Some regard it simply as a manifestation of depressed nutrition of the general

system at the time of tooth-formation, whether such condition be due to scrofula, or to the exanthemata, or any severe illness. Thrush in infancy is also considered a sufficient cause for its production.

Mr. Bridgeman last year started the theory, founded on the observation of one case, that honeycombing was due to an electro-chemical action on the teeth as they erupted. His views were discussed and answered at the Odonto-Chirurgical Society at Edinburgh.

As my paper has extended to a length much greater than I intended, I will conclude it by saying that it appears to me that syphilis, in its misshapement of the teeth, acts by disturbing the vascular supply of the pulp (and possibly also of the dental sac, as these structures derive their vessels from below), and that mercury expends its harmful force on the enamel, which may derive its nutrition partially from above, from vessels (as I understand Mr. Charles Tomes to say) common to it and to the gum; and that mercury, while it may prevent the development of the syphilitic type of tooth, may in its place produce the defect in enamel-formation.—*From Transactions of the Odontological Society of Great Britain.*

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#### AMERICAN DENTAL ASSOCIATION.

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The Seventeenth Annual Session of the AMERICAN DENTAL ASSOCIATION will be held in Chicago, Tuesday, August 7th, 1877, and continue in session four days.

J. H. McQUILLEN,  
*Corresponding Secretary.*

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#### AMERICAN DENTAL CONVENTION, SOUTHERN DENTAL ASSOCIATION, AND DENTAL ASSOCIATION OF THE STATE OF MARYLAND AND DISTRICT OF COLUMBIA, JOINT MEETING.

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A joint meeting of the above Associations will be held at Deer Park and Oakland, Garrett Co., Md., commencing Tuesday, Aug. 14th, 1877, at 11 A. M., and continuing through the week. This is to be a united, but not a consolidated meeting of the three Associations; for while it will consist of a series of joint sessions, each body will control its own internal affairs, and each individual will preserve his distinctive membership in his own body, and at his option acquire membership in the others. The sessions will be held in the Memorial Church in Oak-

land, and members will have conveyance at suitable hours between the two places.

AMERICAN DENTAL CONVENTION.

OFFICERS.—President, W. H. Atkinson, New York ; Vice-President, J. R. Walker, New Orleans ; Cor. Secretary, G. A. Mills, Baltimore ; Rec. Secretary, Ambler Tees, Philadelphia ; Treasurer, J. G. Ambler, New York.

EXECUTIVE COMMITTEE.—R. B. Winder, Baltimore ; H. Townsend, Philadelphia ; W. M. Reynolds, New York ; G. A. Mills, Baltimore ; L. H. Delange, Camden, N. J.

SOUTHERN DENTAL ASSOCIATION.

OFFICERS.—President, S. J. Cobb, Nashville, Tenn. ; 1st Vice-President, A. C. Ford, Atlanta, Ga. ; 2nd Vice-President, A. F. McLain, New Orleans, La. ; 3rd Vice-President, J. B. Patrick, Charleston, S. C. ; Cor. Secretary, W. L. Dismuke, Nashville, Tenn. ; Rec. Secretary, E. S. Chisolm, Tuscaloosa, Ala. ; Treasurer, H. A. Lowrance, Athens, Ga.

EXECUTIVE COMMITTEE.—L. D. Carpenter, Atlanta, Ga. ; J. G. McAuley, Selma, Ala. ; J. G. Angell, New Orleans, La.

DENTAL ASSOCIATION OF MARYLAND AND DISTRICT OF COLUMBIA.

OFFICERS.—President, R. Finley Hunt, Washington ; Vice-President, B. F. Coy, Baltimore ; Cor. Secretary, R. B. Winder, Baltimore ; Rec. Secretary, H. C. Thompson, Washington ; Rep. Secretary, F. F. Drew, Baltimore ; Treasurer, J. Curtiss Smithe, Washington.

EXECUTIVE COMMITTEE.—T. S. Waters, Baltimore ; M. W. Foster, Baltimore ; H. B. Noble, Washington.

This united meeting of the three Associations was arranged with the view of bringing together in social and professional intercourse, to as great an extent as possible, members of the profession from all parts of the country, believing that the best interests of all, both individually and collectively, would be thereby promoted. Every effort will be made to have this occasion a pleasant one.

We will have the valuable voluntary co-operation of able and learned members of the Medical Profession. Papers will be read from eminent members of the three Associations ; our clinical operations will be among the best in the profession ; a wider range than usual will be given to the mechanical processes ; the battery and the spectroscope will be fully and ably treated in their relations to Dentistry ; and, if possible, the effects of anæsthetics on living organisms will be exhibited.

Deer Park and Oakland, six miles apart, are situated on the backbone of the Alleghany Mountains, immediately on the Baltimore and Ohio Railroad. By an arrangement with that Company, members of the Associations and those desiring to become members will purchase at regular rates, tickets to Deer Park or Oakland from the following or intermediate points, viz.: Washington, Baltimore, Pittsburg, Wheeling, Sandusky, Monroeville, Auburn, Chicago, Cincinnati, Columbus, Portsmouth, Parkersburg, Stanton, Lynchburg and Danville. Returning they will receive certificates at Deer Park or Oakland which will pass them over the route they came to the points at which they purchased their tickets.

The Ohio and Mississippi Railroad will sell to duly accredited members round trip tickets as follows: Louisville to Cincinnati, \$5.00; St. Louis to Cincinnati, \$12.00. It is believed that other lines connecting with the Baltimore and Ohio will make for this occasion large reduction in the rates of travel.

The Hotels at Deer Park and Oakland can accommodate all who may attend, and the rates will be reduced from \$3.50 to \$2.50 per day.

The scenery on this road is grand beyond description, and the mountain air is cool, pure and bracing.

It is earnestly hoped that every member of the Association will attend, and a cordial invitation to be present is extended to all other dentists, to members of the Medical Profession and all others interested in dental affairs.

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## ANÆSTHETICS.\*

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TO WHAT EXTENT IS THEIR USE JUSTIFIED IN THE PRACTICE OF DENTISTRY?

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Read before the Ohio State Dental Society, by J. H. SIDDALL.

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The subject of our title comprehends an all-important and much neglected feature in the dental practice. All-important because the demands for it are many, and he who successfully administers it is regarded as a benefactor. *Neglected*, because of the general disposition of the dentist, and patient as well, to shift the responsibility upon the medical profession. While I am willing to recognize in the physician a superior, per-

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\* The subject of Anæsthetics is of such general interest to the Dental Profession, that we introduce the complete discussion, which took place on that topic, at the annual meeting of the Ohio State Dental Society, a report of which has recently been published by order of the Society.—ED.

mit me to indulge myself in a little levity at his expense. If in a period of fourteen years' observation I am to take the manner adopted by a large number of leading physicians of administering anæsthesia as an index to their general knowledge of medicine and treatment, *then*, should *I* be sick, may it be in some secluded spot, where the knight of the pill-box roameth not, and some kind dame, with mother Nature's stimulants and anti-spasmodics and tonics, stands ready to rescue me from that unfortunate throng, whose fast-fading forms are labeled, "Nearer, my God, to Thee." This thrust I make at him who, armed with a bottle of "Squibbs' best," presumptuously seats his patient erect, and without seeking to know the bodily ailments that may of themselves threaten immediate fatality, and with a Thanksgiving dinner within, and a pressure of an hundred weight without, by a patent "self-squelching" corset, proceeds with his scientific entertainment; in a moment he examines the eye, and nods to the dentist to proceed. One tooth is extracted, the exasperated patient kicks over everything within reach, and demands to be hung decently, or acquitted; he lays back, the sponge is again applied, the blood flows freely down his throat, vomiting follows, and again and again the noose slips; finally, with from two or three ounces of chloroform up, he is taken home sick, and the object not accomplished. Right here let me reach for this "medical acrobat," engage for him a situation on the steamer with Peter Cooper, and take the next patient myself. I will see that she comes after her food is digested, is suffering from no organic disease, that she step in a private room and loosen her clothing. I will then explain fully the effects, and ask her to make up her mind not to resist; and after placing a loosely-woven napkin over the nostrils, I apply from a quill about two-thirds ether and one-third chloroform, by bulk, in such a manner as will not burn the skin, slowly and continuously until my patient loses consciousness, and never until an entire muscular relaxation is produced, unless for a very severe operation; then extract the teeth, take them out quickly, raise up the patient, apply a little ammonia to the nostrils, a few jets of cold water over the temples, and the patient soon returns to consciousness and good condition. Permit me in conclusion to say, that in all the cases of fatality from chloroform and ether, the unskilled hand of the operator should share heavily with the agent that produced the death.

#### EVENING SESSION :

The subject of Anæsthetics was again taken up. The following paper upon the subject was read by Dr. Butler :

There does not seem to be any question for argument that anæsthetics

do not have a place in our specialty, as well as any other department of surgery. The justifiable use seems to be the question ; the manner and extent of the use that has prevailed during the last few years would indicate that the use was only limited by the subjects demanding it. I have not been able to see any evidence that dentists, as a class, have become so astute, that they could intelligently say, at a glance, that it is perfectly safe to take an anæsthetic for the most trivial operation.

The best scientific experimenters, and careful observers in years of practice, of the physiological effect on the human system, are not willing to recommend the indiscriminate use of any of the anæsthetics known to the profession, and yet the recommendation and use have become quite common, especially nitrous oxide gas. This state of things is not altogether chargeable to the men that have so charitably opened extracting institutes all over the country, where good healthy teeth are slaughtered by the thousands, to make room for the poorest kind of artificial ones.

But a good share of this great demand for anæsthetics is chargeable to the unwarranted use, or recommendation at least, by many among us and in medicine, that would like to be counted first-class professional men. There are those that, on the whole, are good intelligent practitioners, who decline giving any anæsthetic, and if they stopped there it would be well. But when importuned they shirk by saying, Mr. C. or Dr. H. gives ether or gas, go to him, and will even say, if questioned, that it is entirely safe to take it. But suppose some one dies at neighbor H.'s office, would they be ready to take any of the responsibility, or would they be ready to give their support to a condemnatory resolution in a society, or article of censure in the public newspaper ? This way of treating the matter is altogether too common, and shows anything but intelligent professional integrity.

The same rules should be as rigidly observed, and the same obligation impel us, that should in using them in any other department of surgery. If there is any difference, it should be in favor of greater caution, for it is well known that, as a rule, patients come to us in a different physical and mental condition than they do when needing the services of the general surgeon. Fear and resistance predominate; disease and suffering inure the system to shock, and there comes with it a settled, quiet submission to an anæsthetic and the operation, because it is the best that can be done. Of one thing I am quite certain, that we are not justifiable in allowing a person that has no correct knowledge of the power of an anæsthetic to administer it for us to operate ; we

should select an anæsthetist, or a person of experience, and one that will not yield his better judgment by the importunity of friends or demand of patients. This is an all-important item ; no anæsthetic is safe used hurriedly, or to crowd and smother down a patient.

In England it is not legal for any one to administer anæsthetics but a regular M.D. We should be as well posted as to the action of the different anæsthetic agents on the human system, and qualified as fully to use them, as any class of medical men, or else have nothing to do with, or say about them. For the extraction of teeth, etc., as a rule, they should not be given : but to the first stage, *i. e.*, to benumb sensation, not annul it, and the mouth should be kept partially open, to prevent the masseters from becoming rigid, and assume the prerogative of how much shall be given rather than the patient. The time has fully come, when those who desire recognition as professional men must show the requisite qualities in what they say and do in this as well as other matters in practice. The above suggestions are not made at random, but based upon a firm conviction growing out of a goodly number of years of observation and use of anæsthetics in general surgery, from the simplest to the most complicated or extensive operations made in this country. And so long as they have a place among the remedial agents we are justified in using them to a limited extent. The tender providences of nature are admirably displayed in preparing medicines for use in the beautiful plant and fragrant flowers, that we might not refuse the remedy as more distasteful than our diseases.

On motion of Dr. Brown, the paper was referred to the Committee on Publication.

Dr. Watt : I don't think I need take much time on this subject, and the question takes it for granted that we should use them, though I think the idea prevails in some places that they should not be used in dentistry. If it be true that the extraction of a tooth is a surgical operation, I suppose dentists perform ten surgical operations to one that is performed by all the physicians in the United States. Whether it is a surgical operation or not, the extraction of a tooth is vastly more painful than the average of operations called for in general surgery. I have seen a man shot and mangled, with at least five bullets in him, who sat without an anæsthetic, and had the balls cut out and the wounds dressed, with resection of bones, without a whine or murmur, and I have seen that same man scream like a wild-cat during the extraction of a tooth, when in good health, and he said it hurt worse than the shots and all the subsequent operations. In my own experience, I have had

a few little surgical operations performed upon myself, some of which you might think were very painful; but Dr Taft (pointing to the Doctor) hurt me worse extracting a tooth the day before I was married, than all the other operations have hurt me, and I believe now, if I were expected to be hurt half as bad, I would take an anæsthetic. I have had four teeth drawn, two of them hurt very badly.

[Dr. Watt's remarks were mainly in answer to questions, which accounts for apparently sudden changes.—Ed.]

I suppose there is another question in connection with this matter, that is, in regard to the safety in using anæsthetics, and this is an important question, whether it relates to the immediate or the remote danger; some think, even if there is no immediate danger to the patient, he often remains unhealthy for weeks, or months, or years. Now it is a fact that sometimes when nitrous oxide is administered its effects will be felt a long time afterward; sometimes the patient is subject to spasms of the layrnæ, sudden thoracic spasms, and this for days, and sometimes for weeks after. I tried the experiment once, of putting one gallon of nitric oxide in fifty-nine gallons of nitrous oxide, the gases both pure, and left them in that condition some hours, until I supposed they would be thoroughly mixed. I breathed about three gallons of that mixture, and suffered with spasms of the respiratory muscles for over three weeks afterward: I would go to sleep sometimes, but not without the presence of a friend to awake me, artificial respiration being sometimes necessary; and I believe that, without artificial respiration, I would not have breathed again.

I think we all know there is a risk in administering chloroform, and more risk in an erect than in a recumbent position. For a long time I have not given chloroform, except for operations in general surgery. One of the longest cases I remember, in regard to the duration of its effects, lasted three hours and forty-five minutes. I had the patient profoundly unconscious, for that length of time, for an operation performed by Dr. Mussey. But for the extraction of teeth I do not think we are justified in using it. I have used the nitrous oxide very frequently. With regard to nitrous oxide, I will say I think there is no doubt that it is used a hundred times in America for every once that all the other anæsthetics combined are used. I am not making its use a specialty, and do not try to get that sort of business, nor do I try to get any extracting of teeth outside of my office; I do not want any outside of my own legitimate practice; yet I am sure I administer nitrous oxide ten times as often as all the physicians in my county administer other anæsthetics, and I take

it for granted that there is about the same proportion the country over. There is no doubt that it is administered a great many more times than all other anæsthetics. Now in a large majority of cases—in probably ninety-nine out of a hundred, it is administered thoughtlessly, and sometimes it is prepared without care. It is frequently administered thoughtlessly, carelessly, recklessly, or ignorantly, and sometimes all of these combined. Now, if it is such a dangerous thing as some think, we certainly would hear of bad results arising from its use in many cases. I have seen men administer it who had no clear knowledge of anæsthesia at all, and indeed it is surprising what ignorance there is in regard to it. When the public are educated up properly, in this country, it will be administered as frequently as now, but much more intelligently. It is surprising what ignorance prevails with regard to anæsthesia, it being regarded as synonymous with unconsciousness or delirium, but it is very different from either. Until we require an educated profession, and through that educate the public, this ignorance will remain. In my educated patients I operate with full consciousness, whether I give them ether, chloroform, or nitrous oxide ; but when they are not educated, I have to produce unconsciousness, but I never prop the mouth open. The rigidity of the muscles is probably caused by the retained carbonic acid. It is the carbon partly burned, or fully burned, remaining in the blood, and not the anæsthetic, that produces the rigidity.

There is a public notion that anæsthetics excite the venereal passions. They have a contrary effect in either sex. Sometimes, especially in administering nitrous oxide, the patient will arrive at a certain stage in anæsthesia, and will not be willing to go any farther, but will try to hold the breath. In such a case I throw the valve open and let the patient breathe air for a few breaths.

Dr. Rehwinkel : I would like to know whether, in the anæsthetics named, you include sulphuric ether ?

Dr. Watt : Yes, sir. I regard the use of anæsthetics in dentistry as a legitimate practice, not for the extraction of teeth that can be saved, or ought to be saved, but where an anæsthetic is necessary. We hear arguments sometimes made condemning the use of anæsthetics at all, because it divests the operation of its terrors, and therefore causes persons to have teeth extracted that should not be. You all know that it is an axiom in logic that an argument that proves too much proves nothing. That argument, if it proves anything, would prove that the improved forceps which render the operation less terrific than under the old turn-key—for it divests the operation of half its terrors—would cause too many persons to

have teeth extracted ; the argument would be that we must go back to the old methods, and the dentists must stop business, and let blacksmiths and butchers extract teeth with the turn-key. Then it would prove, too, that all efforts in obstetrical science—all attempts to lessen the pains of childbirth—must be blotted out of the books, and cease to be taught in our colleges, that the pains of maternity may be more painful; because in some families there are more babies than there ought to be, this matter must be made more terrific in order to remove that trouble. Thus, you see, the argument proves too much. I would take a case that frequently occurs : We will say the second and third molars are badly decayed and affected with periostitis—the patient suffering excessively, and those teeth must be removed. Now, gentlemen, you may say what you please, but on an average, that operation is more painful than the amputation of an arm. To remove those two teeth is more painful and produces more of a nervous shock—I don't mean more of the after consequences, but more of a shock at the time—than the amputation of an arm, yet I presume any one here, if he were to have an arm removed, and it should be done without the use of an anæsthetic, would try to recover damages from the surgeon for mal-practice. I do not believe that a jury in Franklin county could be picked up—if there were in the man's constitution no special reason why he should not have an anæsthetic administered—I don't believe there is a jury in Franklin county that wouldn't give damages for mal-practice, where they had made an amputation of this kind without administering an anæsthetic, in the present condition of medical science. Now, when I can take a young girl, or a man, or a boy, or a woman, who comes to my office, who is self-possessed, and confident that he or she is not going to be hurt, when I have that patient sit down in my chair, and take the inhaler, and without any pain at all I extract the teeth, and see that boy, or girl—if a girl, perhaps she goes right out and does her shopping without being in the office more than ten or twelve minutes—going away as if nothing had happened, without suffering a pang, without a change of complexion, without being conscious of anything hurting—when I do this day after day, year in and year out, I am convinced that anæsthetics have a distinct place in dentistry. I am no more in favor of, and no more in sympathy with, the indiscriminate slaughter of the dental organs than any other right-minded man. We see advertisements in religious and other papers of quacks, who each pretends that he has a perfect anæsthetic known only to himself, and which is composed of ingredients that are perfectly safe, while they go on killing peo-

ple almost every day with chloroform. I have become disgusted with these things, and the profession and the public are becoming disgusted with them ; and we must not suffer anæsthetics to remain in the hands of quacks.

A Member : Do you think it more than ordinarily unsafe to administer anæsthetics to a woman during gestation ?

Dr Watt : I would avoid all operations I could when a woman is in such a condition. I believe I never administered either ether or chloroform to such, only after labor had commenced. I have done it in such cases to alleviate the pains. But I have not hesitated, when a severe operation was to be performed, to give nitrous oxide. I think under such circumstances, when they are allowed to be worked up by excitement in view of what is to be performed, it is far more dangerous than to administer this anæsthetic. I have given it to women during every period of gestation up to within a week of confinement, and without any trouble in the matter, but I never gave chloroform or ether in such cases. I would be fearful that it would produce nausea and vomiting. You don't know at all when you give chloroform, that the patient will not suffer from nausea, and you have no means of telling, but when you administer nitrous oxide the patient usually suffers no bad results.

Excuse me, I did administer chloroform once to a woman in her fourth month. She had been suffering extremely for months, and went to a physician who put something in her mouth, which he said would stop her teeth from aching. I don't know what it was, but whatever it was, it caused the saliva to run down out of her mouth and scald her chin, throat and breast, running down on one of her nipples, and abrading it. She lay in bed for some time, but as soon as she could get about she came to me, and I administered chloroform and removed several teeth. The physician heard of it and denounced me severely, as did some others. Those who knew me said I must have had some good reason for it. The physician told her she would have a miscarriage in twenty-four hours. She was also told that the child would be deformed and that it would be idiotic. It was a very pretty babe. I was denounced a good deal for what I did in this case, and got a deal of cursing, but the woman got along well and became healthy.

The peculiarity about the case was, that it was the only smart child in the whole family—so smart that they made a lawyer of him. It seemed to me as if God was determined to vindicate me. That is the only case I know of where I have given either ether or chloroform to a woman pregnant, until after labor had begun.

There is another point in reference to the administration of anæsthetics of which I will speak. I do not like the method of covering the mouth. That was Dr. Mussey's plan, but I showed him a "more excellent way." The ordinary way is to drop the chloroform on a thin towel, or something of the kind, dropping it and letting the patient inhale it from that. The trouble in this way is with the expiration, and in giving chloroform, if there is no obstruction to the expiration, you will not, one time in twenty, I think not one time in fifty, have any delirium whatever. In the first few years I did, but in the last twenty years I don't think I have had one chloroform case in fifty where there was any delirium. The point is to attend to the expiration. If I should stand a half a foot from and facing that wall, expiration would be obstructed in such a way that I would feel a sense of suffocation in three minutes. You may think that this is strange, but the wall acts as a kind of dam. If you will observe the caution I have given you, I think you will have no trouble with anæsthetics.

Some one suggested a mixture of ether and chloroform. That is the way I was taught by the late Dr. Mussey. That was his favorite way. I have long since preferred to use either the one or the other and I have better results. But the main reason that induced me to adopt that mode, was because, in the first place, I could read the symptoms better. It seemed to me that I could read the manifestations much more clearly when I gave one than when I gave both.

A member inquired what position he preferred the patient to occupy when giving nitrous oxide.

Dr. Watt : I like the position of lying on the side, if it is not inconvenient to the patient. I think that the better for administering any anæsthetic, but I do not hesitate to administer in a reclining position.

A Member : Would you administer it to children of two, three, four or five years of age ?

Dr. Watt : Children generally bear anæsthetics better than older persons. It is a little difficult to get a child as young as that to take nitrous oxide. In administering that anæsthetic we need the consent of the patient. I have, however, administered it in several instances to children four years old. I administered it to a child in Cincinnati once, in order to perform an operation, and in that case I deceived the child in taking it. The child's aunt held it in her lap, and I put the inhaler to my mouth, as if inhaling, and would then pass it to the child, and then get it to pass it to its aunt ; and in perhaps forty seconds the child forgot to hand it up to its aunt and went promptly and nicely into a sound sleep.

Dr. Herriott : When reduced to a liquid form, can nitrous oxide lose its strength or power to produce anæsthesia, when kept perfectly cool in an iron cylinder ?

Dr. Watt : I think not ; it might a little. In an iron cylinder the oxygen might let go the nitrogen, might forsake it and take the iron. It might set the nitrogen free. We would have an inert substance to that extent.

A Member : Is the nitrous oxide in a liquid form more powerful than in the gaseous form ?

Dr. Watt : No.

A Member : I would like to ask if there is any well-authenticated cases of death from chloroform or ether in childbed, or in obstetrical practice ?

Dr. Watt : I am not familiar with the statistics in that respect. I think if there are any at all they are much less frequent than in surgical operations.

Dr. Herriott : To what extent would you give nitrous oxide ?

Dr. Watt : To the extent of complete anæsthesia. When I would get the patient composed, I would give it just as freely as I would give Dover's powders, or morphine, or quinine, or coffee.

Dr. Keely : In your opinion, do you think it any advantage to impress upon the mind of the patient, before taking an anæsthetic, to keep the mouth open ?

Dr. Watt : No. I tell them in this way : I use an inhaler that puts the mouth a little open, and I tell them, "if you let this go between your teeth, it will be easier on your mouth," and they are not quite so apt to displace it. In a large majority of cases when I take that out they do not close the mouth, but just as quickly as I can, I get the forceps in the mouth. I have not been troubled many times in all my experience, or defeated by the patient shutting his mouth.

Dr. Keely : Do you think there is any advantage, then, in impressing the patient with the idea that he should keep his mouth open ?

Dr. Watt : I never found any. I think if you impress them with the idea that they must have absolute confidence in you, you need impress them with nothing else.

I have not seen a patient's face darkened from the effects of nitrous oxide—not since I was here last winter, and I don't know how long before.

A Member : Do you make it yourself ?

Dr. Watt : I make it myself.

Dr. Reed : I would like to ask whether or not, with your present

knowledge of the general average ability of the men who are giving nitrous oxide, you don't question the propriety of your remarks being published and going out to the world as favorable to the administration of nitrous oxide, as you have given it here?

If we all understood this matter as well as you do—and I, for my part, am perfectly ready to accord to you your superiority in this respect—and would have the same success in its administration that you have had, it would be a very different case; but with your knowledge of the fact I have mentioned, don't you question the propriety of this being published and their referring to you?

Dr. Watt : No, sir. If I preach to you the gospel of Jesus Christ, it will either send you heaven-ward or hell-ward ; and I am not responsible for the truth or the effect of it. I do question the propriety of the average man administering nitrous oxide. I don't know a dozen men in the United States—now, there are a number who are using nitrous oxide, that I have no means of knowing, and don't know how well they understand the use of it—and there may be such present—but of those with whom I am acquainted, and with whom I have conversed upon this subject, there are very few who are fit to give it or to make it.

Dr. Horton : I would like to ask the doctor a question, which is not exactly germane to the subject under discussion : that is, what is the *modus operandi* of nitrous oxide in producing anæsthesia? Does it act upon the nerve fibres, or nerve cells, or what is the process when that is taken into the lungs to produce the effect you desire?

Dr. Watt : I don't know and don't know anybody that does. If you will give me a pair of crutches and tell me where to find the man that can tell, I will go all the way on foot to find him.

Dr. Smith : What is your opinion?

Dr. Watt : Haven't got any. I am like the sailor who was asked what his politics were. "The people are full of politics," said he, "but I haven't got the first politic."

(*To be Continued.*)

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#### AMERICAN ACADEMY OF DENTAL SCIENCE.

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The tenth annual meeting of the American Academy of Dental Science will be held in Boston, on Monday, September 24th, 1877, at ten o'clock A. M.

The annual address will be delivered at two P. M., by Dr. Wm. H. Dwinelle, of New York.

GEO. T. MOFFATT, *Cor. Secretary.*

## NATIONAL DENTAL HOSPITAL.

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We here reproduce a code of instructions for the management and preservation of the teeth, drawn up by the Medical Committee of the above hospital for distribution among the patients:

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NATIONAL DENTAL HOSPITAL, 149 GREAT PORTLAND STREET, W.

*Open Daily from 9 till 11 A. M., for the Necessitous Poor Only.*

The Medical Committee have prepared the following directions regarding the Teeth:

I. The teeth should be cleaned at least once a day, the best time being at night—last thing. For this purpose use a soft tooth-brush, on which take a little soap, and then some precipitated chalk, brushing up, down and across. There is rarely any objection to the friction causing the gums to bleed slightly.

II. Avoid all rough usage of the teeth, such as cracking nuts, biting thread, etc., as by so doing even good sound teeth may be injured.

III. When decay is first observed, advice should at once be sought. It is the “stopping” in a small hole that is of the greatest service; though not infrequently a large filling preserves the tooth for years.

IV. It is of the greatest importance that children from four years of age and upwards should have their teeth frequently examined by a Dental Surgeon, to see that the First Set, particularly the back teeth, are not decaying too early; and to have the opportunity of timely treatment for the regulation and preservation of the Second Set.

V. Children should be taught to *rinse* the mouth night and morning, and to begin the use of the tooth-brush early.

VI. With regard to the food of children, to those who are old enough, “whole-meal” bread, porridge and milk should be given. This is a much more wholesome and substantial food than white bread.

VII. If the foregoing instructions were carried out, comparatively few teeth would have to be extracted.

VIII. Those who do not seek nor receive hospital aid, are recommended to consult qualified practitioners, and not persons who advertise by show-cases, puffing advertisements, etc.—*From Monthly Review of Dental Surgery.*

## THE PROSECUTION OF MR. GOULD IN 1859 FOR USING THE TITLE OF SURGEON-DENTIST.

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Reference having been made by Mr. Tomes and others to this case, we have deemed it of sufficient importance to reprint the following extract bearing upon it. This we are enabled to do through the courtesy of Mr. Gould himself, who has kindly furnished us with the necessary documents.

Mr. Gould was first summoned on October 11th, 1859, before the Kingston magistrates by Mr. Ladd, Secretary to the London Medical Registration Association, under the 40th section of the Act of 21st and 22d Vic., Cap. 90, entitled "The Medical Act," and charged with using the title of surgeon without the legal qualification, and not being registered under the Medical Act, and he was further charged with treating a patient surgically by prescribing for a bruised elbow, but with this latter matter we have little, if anything, to do, the magistrates having decided in favor of Mr. Gould, and against Mr. Ladd.

COURT OF QUEEN'S BENCH.—JAN. 21, 1860.

[Before Lord Chief Justice Cockburn and Mr. Justice Crompton.]

Ladd (Appellant) and Gould (Respondent.)

This was a case stated by the magistrates of Kingston-upon-Thames at the request of the appellant, submitting for the opinion of the Court whether, upon the evidence, Mr. Gould was guilty of the offense contemplated by the Act, the magistrates having dismissed the information.

Mr. Lush, Q. C., and another, appeared for the appellant, and Mr. Quain and Mr. Kelly for the respondent.

Mr. Lush said this was a case stated for the opinion of the Court under the New Medical Act, and it raised the question whether the word "Surgeon," in connection with the words "and Mechanical Dentist," was a using of the title of a Surgeon within the 40th section of the Medical Act. The question was whether, on the evidence, the party was guilty.

He was stopped by the Lord Chief Justice Cockburn saying, "Well, but what have we to do with this—there is no case for us—this is a question of facts, not of law; and the Court never interferes with justices' decisions on facts. We can only entertain a question of law, and there is none in this case."

Mr. Justice Crompton: This is a question on which the magistrates were bound to draw their own conclusion from the facts.

Mr. Lush: Yes, my Lords, this is an appeal from the justices raising a point of law as to the use of the word "Surgeon."

Lord Chief Justice: I do not think there was any false pretense in using the word "Surgeon." That is a question of facts for the justices as to the intention. Did he willfully and falsely assume it, and pretend to be a Surgeon? The justices had the facts before them, and I think decided quite rightly.

Mr. Justice Crompton said the respondent had called himself "Surgeon and Mechanical Dentist," which he thought meant much the same as "Surgeon-Dentist." I think I should have decided as they did.

Mr. Lush said the magistrates meant to leave to the Court whether the evidence brought the party within the meaning of the Act.

Lord Chief Justice: I think it did not, but that is a question of fact. This is like the case of persons calling themselves Surgeon-Dentists who are known not to be Surgeons, though some of them are.

Mr. Lush: But, my Lords, he called himself a Surgeon; he had the word Surgeon on his door-plate, and he is not one.

Lord Chief Justice: Yes, but it connected with the word Dentist, as Surgeon-Dentist.

Mr. Lush: No, the inscription on the plate is Surgeon and Mechanical Dentist; he calls himself a Surgeon and a Mechanical Dentist.

Lord Chief Justice: No, no; that is explained by his statement before the justices, that originally his plate was "Surgeon-Dentist," but he found it necessary to explain to the public that he made artificial teeth, and sometime ago, fifteen or sixteen years, he introduced the words "and Mechanical," and it means and reads thus: "Surgeon-Dentist and Mechanical Dentist"—shortly expressed, "Surgeon and Mechanical Dentist." There is no intention to deceive. That is not assuming the name of Surgeon according to the Act.

Mr. Justice Crompton: There are men who call themselves Surgeon-Corn-cutters, Surgeon-Chiropodists, as well as Surgeon-Dentists. That is not assuming the name of a Surgeon. Surgeon-Dentist means that the person is skillful in treating diseases of the teeth, and nothing more. It is a matter of fact for the magistrates to decide, and with the evidence before them they might have found either way, but the Court would not find for them. The statute gives power to put questions of law only to this Court, not questions of fact.

Lord Chief Justice: Why, Dentists have always called themselves Surgeon-Dentists, custom, immemorial usage have sanctioned it; everybody understands what it means, and knows them as such.

Mr. Lush: But, my Lords, he acted as a Surgeon and practiced as one; the woman went to him as a Surgeon, believing him to be one; he treats her as one and she pays him for the remedy.

Lord Chief Justice: Pooh ! pooh ! [holding up his arm] the woman went to him because she could get something cheaper at a chemist's than a doctor's; he gives her a bit of plaster or something to put on her elbow she had struck, and to call that practicing as a Surgeon ! No, no.

Mr. Justice Crompton: It is not because a woman goes in to get a liniment to rub her arm that he is to be considered as acting as a Surgeon.

Mr. Lush: Then, if your Lordships decide that point the Medical Registration Bill is a dead letter.

Lord Chief Justice: No, we do not decide the point, for it is not before us.

Mr. Lush: That point will be brought before you before long.

Lord Chief Justice: Very well, when it is we will decide it.

Mr. Lush: Will you send the case back for re-hearing ?

Lord Chief Justice: Certainly not; the case has been properly decided. I do not think there was any falsehood or any intention to deceive, which was necessary to bring the case within the Act; that was also the opinion of the magistrates. They might have come to a different opinion if the evidence justified it.

Mr. Justice Crompton: The magistrates had all the facts before them; they were the proper judges of the facts, and could have decided either one way or the other; but they found that he did not willfully and falsely pretend to be a Surgeon, and I think they decided properly.

Judgment for respondent.—*British Journal of Dental Science.*

## ARTIFICIAL TEETH.

By THOMAS FLETCHER.

The question of covering the palate with a large plate, condemned so strongly in Mr. Lacon's letter in last issue, has been a matter of practical experiment with me for several years.

Being in a district where many persons depend for their income on their sensitive taste (buyers of dairy produce, etc.), I have tested the point repeatedly with the same result: *i.e.*, when the hard palate is quite covered the sense of taste is *altered* (not destroyed) for a time, generally two or three weeks, but is eventually practically as sensitive as before the plate was worn.

I remember two complaints only, and in both these I found that the

plates were never removed for cleaning—quite a sufficient cause for loss of all enjoyment of food.

The wearer of one of the cases referred to was insulted when I told her that she ought to clean her plate, and persisted in declaring she did so twice daily; the cleaning (?) I found on inquiry to amount to *carefully brushing the front of the teeth where they were seen in the mouth*.

The comment on Mr. Lacon's letter by the editor of the *Lancet* is anything but a compliment to the *Surgeon-Dentist*, whatever he intended it to be. The veriest tinker in artificial teeth would have more sense than to trouble himself to make difficult suction plates if a simple narrow plate and springs would answer the purpose better.—*British Journal of Dental Science*.

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## TETANUS.

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A paper read before the Detroit Academy of Medicine by N. F. BROWN, M.D.

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Tetanus is defined as a functional affection of the muscular system, in which there is continued rigidity of the muscles, accompanied with spasms, generally of a tonic character. Tetanus frequently arises from wounds or injuries, when it is designated as traumatic tetanus; occurring otherwise, it is termed idiopathic tetanus.

The important varieties of this disease are the traumatic and idiopathic. The latter variety is seldom seen.

Tetanus occurs in all ages, from early infancy to old age, but authors generally agree that it attacks the younger members of the community, and that it is usually of the traumatic character.

Climate seems to exert a decided influence upon the disease, cases occurring much more frequently in warm and tropical regions than in temperate or cold latitudes. The causes of the disease are numerous, but prominent among these are wounds, particularly lacerated wounds; and it is worthy of notice that tetanus frequently results from a very slight wound, and that extensive lacerations are not so apt to be followed with the disease. All constitutions are susceptible to the disease, but generally the subject is one of debility; yet in hot climates a robust laborer is as apt to have tetanus from a slight wound as his weaker companion.

The diagnosis is generally easily made, but the physiological effects of strychnia may be mistaken for tetanus.

When we look at a case of tetanus, we are astounded at the unknown morbid agent, or agents, which produce this terrible condition; and as post mortem examinations have thrown but little light on its pathology, we are compelled to treat the disease empirically. As I am not able to add anything to the literature of this subject, I will report upon a case

of the traumatic variety which came under my care a few months since.

In the evening of the 28th of last September I was called to see a German, married, thirty-six years of age, light, wiry frame, nervous temperament, and exceedingly irritable temper.

This man, although a "hard drinker," was industrious, and could work at anything from "roust-about" to blacksmithing and carriage-making, and while thus employed tramped upon a rusty nail, which passed through the sole of the shoe and entered the great toe, passing through close to the bone. After removing the nail he bathed the toe with cold water, and as the wound was not painful, continued work, and after one day the discharge ceased, the wound closed up; but on the fourth day it became painful and slightly inflamed, and on the fifth day he complained of aching in the lower extremities and "stiffness" in the neck and back.

In the evening, when I called, I found him sitting in a chair, perfectly rational, but quite sensitive and anxious; complained some of sore throat, but muscles of the face were not yet affected, but movements of the body caused great pain in the posterior muscles of the neck and back.

I gave chloral and bromide of potassium every hour in doses of twenty grains, but he was not able to take more than three doses, as trismus took place shortly after taking the third dose. In the morning I found him in true tetanic spasm, and all the muscles of the trunk and extremities seemed to be involved, and the body inclined to opisthotonos, the rigidity of the muscles being so severe that the body could have been wholly raised by lifting at either extremity. Deglutition being almost impossible, as even the contemplation of food or drink would induce severe spasm, I gave one grain of sulphate of morphia hypodermically, which had the effect of decidedly ameliorating the suffering of the patient.

He regained the use of his arms for a short time, which, previous to this, were immovable. During this time of relief considerable nourishment was taken in a liquid form, and the patient became quite cheerful, and expected to recover. He also took large doses of quinine, bromide of potassium and belladonna during this time, but after about six hours of partial relief, the spasms became more frequent and severe, and, swallowing being impossible, I again gave morphia subcutaneously, but without decided effect.

The mind of the patient continued perfectly clear, but the suffering was indescribable, and continued to the fifth day, when there was considerable diminution of pain and spasm, lasting about one hour, when the patient gave a terrible shriek, the body assuming the position of emprosthotonos, which continued a few moments, and death came to the relief of the sufferer.—*Detroit Med. Journal.*

JOHNSTONS'  
Dental Miscellany.

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VOL. IV.—*AUGUST*, 1877.—No. 44.

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CHEMICAL PHILOSOPHY.

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THE QUANTIVALENCE OF ATOMS.

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By W. S. ELLIOTT, D.D.S., M.D.S., Goshen, N. Y.

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Second District Dental Society, July 12th, 1877.

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An evident property of matter is extension. This extension is the result of an aggregation of molecules or little masses—these again of atoms. Whatever bounds there may exist of the divisibility of matter, we are practically assured that the physical sense does not or cannot fully appreciate the ultimate limitations. So long, however, as a substance retains its physical properties, so long may its identity be traced; therefore it may be implied that a division of the smallest mass is other than a physical realization. So it may be received. The mind sees other and more minute divisibilities, and under such circumstances the mass is deemed to have been reduced to that condition which is pronounced a finality. This transition from the physical to the ideal domain involves other laws of governance than those which are attendant upon the mass as such, and the atom becomes another zero, around which plays that special form of force denominated chemical affinity. Atoms, as well as molecules, are differentiated; they are different in kind and different in powers, and they display this differentiation in their varied activities and capabilities.

An atom of O will invite to itself two atoms of H, and will be satisfied

in its desires. An atom of Cl will be satisfied with only one atom of H. It will therefore appear that between O and Cl there exists a notable difference, which difference, in order that it may meet our argument, may be spoken of as *desire, affection, capability, property, power, atomicity, quantity*, etc. It is this quantity or quantivalence of atoms that we purpose to speak of in this paper.

There are now recognized in the natural world at least sixty-four elements—estimated as such because they are not by any known method made capable of further simplification.

The properties exhibited by the aggregated atoms of any individual element, as a rule, remain unchanged. The properties of the aggregated atoms of several elements are very different from those of either of the combining elements. We will therefore note the distinction between the simple and compound molecule.

Two or more atoms of H or of O united retain still the properties of H or O, but O *and* H united results in water, which is very different from either of the constituents. Since H has been received as the unit of chemical weights, and since in all H combinations it manifests a satisfaction in its union with other single atoms, so it is also taken as a unit of quantivalence; and being thus a unit of quantivalence, it is therefore called *univalent*.

An atom of H will unite with another atom of H, and a molecule of H<sub>2</sub> is the result; the satisfaction is complete, so far as it can be, in the absence of other elements. An atom of H will unite with an atom of Cl, and a molecule of hydrochloric acid is the result. The satisfaction is complete on the part of the Cl atom as well as that of H. This shows that H is univalent, and Cl, being also satisfied, is similarly nominated.

An atom of Cl will unite with an atom of sodium (Na), and a molecule of chloride of sodium is the result. The satisfaction is complete on the part of the Na atom, which further shows that Na is univalent. Again, an atom of Na will unite with an atom of Br, and a molecule of bromide of sodium is the result. The satisfaction is complete on the part of the Br atom, which shows that Br, too, is univalent.

An atom of Br will unite with an atom of K, and a molecule of bromide of potassium is the result. The satisfaction on the part of the K proves this, too, a univalent atom.

Thus we may go on, and, doing so, we would be able to tabulate the several elements partly as shown on page 283.

O requires two atoms of a univalent element to satisfy its desires. Thus its union with H results in the production of a compound which is

expressed  $H_2O$ . Here we observe that O becomes *bivalent*, in accordance with the law as evidenced in the case of the univalent elements.

Univalent.	Bivalent.	Trivalent.	Quadrivalent.	Pentivalent.	Sextivalent.
H	O	N	C	P	As
Li	Zn	Al	Si	Sn	Al
Br	H	As	Ir	As	S
Na	H <sub>2</sub>	Bi	Pl	Bi	Co
K	Ca	As	Os	Ta	Mn
N	Ca	P	Pa	Nb	Ni
Ag	S	Tl	Pt	N	Se

Table of Quantivalence.

Again, O will receive to itself two atoms of Ag, forming oxide of silver  $=Ag_2O$ . Here again it shows itself to be bivalent, since it does not become satisfied except with at least two atoms of the univalent element. Other combinations, however, show that O is sometimes satisfied with only one atom of the combining element—as, for instance, in its union with Zn, one atom of each is sufficient to establish the identity of the resultant oxide of zinc. And zinc is otherwise proved to be bivalent, therefore the bonds of affinity are in this case equalized, and the theory to which we refer is again affirmed. Several other elements associate with O under the same circumstances, all of which are proved to have bivalent quantities.

In pursuing the subject, let us now take the last-mentioned of these bivalent elements, viz.: S. This will unite with a single atom of the bivalent Zn, and being of the same quantivalence, the bonds are mutually satisfied; the resultant is, sulphide of zinc  $=ZnS$ . But let S be united with a univalent—say Ag—and it will require two atoms of the latter to complete the satisfaction, which will necessitate the writing of the formula— $Ag_2S$ .

Calcium, another of the bivalent elements, will receive to its embrace two atoms of the univalent Cl, resulting in the stable compound,  $CaCl_2$ , which embodies the principle of quantivalence that we refer to.

Let us now present another formula,  $SbCl_3$ . The first constituent of this compound, antimony, upon the chart appears under the head of trivalents; that is, it possesses that property of combination which enables it to take up three atoms of a univalent element, and the satisfaction is not complete unless this number of bonds is in some way

presented. While now these elements have toward each other a positive affinity, at the same time this proportion of atomic bonds must always be maintained. Under the circumstances specified we claim however no control, since the quantivalence in either case is a constant factor, and is manifest under all varieties of combinations.

The chloride of gold ( $\text{AuCl}_3$ ) presents a corresponding formula. Au is trivalent, Cl univalent. One atom of Au to three of Cl is productive of a compound molecule, having the familiar properties ascribed to it; at the same time the bonds of atomicity are fully satisfied.

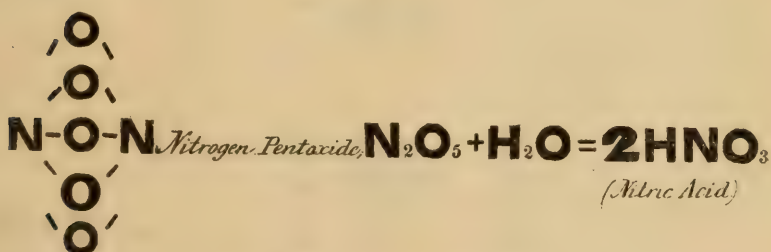
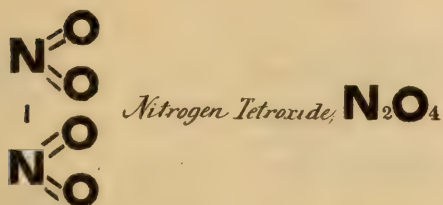
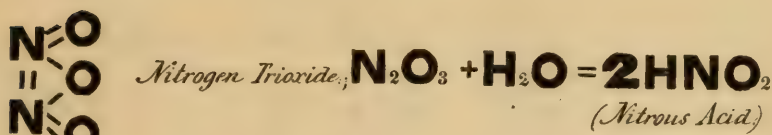
Other examples of quantivalence will impress us, perhaps, more fully with the scheme as developed in the modern science of chemistry, and its importance cannot be underestimated if we would cultivate our judgment in matters pertaining to practice, for it is in proportion to the closeness of our observations in collateral sciences that we are able to appreciate the advancing claims of our specialty.

Glancing down the column of the quadrivalents in the table, you will recognize the symbols of familiar elements. At the head stands carbon, one of the most abundant of them all, and one capable of assuming a great variety of aspects: transparent, pure and colorless, as presented in the diamond; dull, opaque and black in graphite; spongy and porous in wood charcoal; oily and unctuous in bitumen; crystalline and chromatic in anthracite. It forms a large proportion of the earth's crust, and enters largely into the structures of all organic substances. It is remarkable for its indisposition to enter directly into combination with the other elements, and, as a matter of fact, at the ordinary temperature it appears quite incapable of doing so; but at a high temperature carbon combines readily with oxygen, sulphur and some of the metals; thus, with O, it joins by the imbibition of two atoms; since in these two atoms there are four quantivalent bonds, therefore the saturation is complete—one atom of a quadrivalent to two atoms of a bivalent. The product—carbonic acid gas—is formulated thus:  $\text{CO}_2$ .

Other quadrivalent combinations are too indirect and intricate whereby to illustrate the subject of our paper. We will pass, then, to a consideration of the *quintivalents*, and to note the discrepancies in part which seem to abrogate against a complete fulfillment of the quantivalent theory.

It will be observed that N is included in the column of quintivalents, as well as in those of the trivalents and univalents. Here would seem to be a condition of things which must modify our inference that all the elements were possessed of a positive and definite quantivalence. The rule, however, remains good, and the exceptions exist among only a few elements

which it is proven are possessed of *multivalent* tendencies. In order to further elucidate our subject, let us assign to this substance its maximum degree of power, and endeavor to reconcile the theory with the apparently contradictory presentation of facts under varied circumstances.

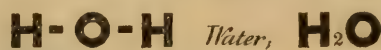
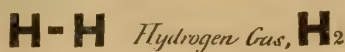


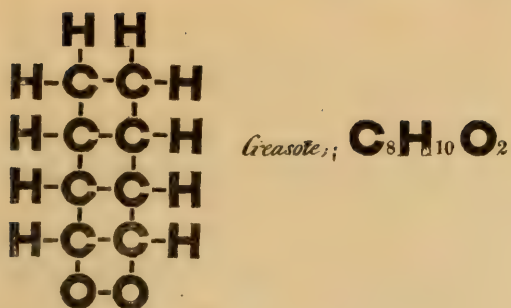
In the formation of the compound nitrogen monoxide (usually called nitrous oxide), we observe that the bivalent O, in strict accordance with its own desires, takes to itself two atoms of N. In this case the element O is fully satisfied; but if we ascribe to N its full share of quantivalence, it will be evident that there are bonds still unused existing in the atoms. How, then, shall we reconcile this fact of the formation of a perfect molecule? If we accept the electro-chemical theory of attraction, we would dispose of the anomaly by admitting a balance of polarity between the unused bonds, thus modifying any antagonism which would otherwise prevent the consummation of the characteristic molecular structure. The strong tendency, however, of atoms to unite with other than their own kind will leave these bonds always

ready to change their relationship whenever the circumstances are favorable, and we will, in this case, find it especially true that the presentation of another atom of O will release two of these bonds from their own affinity, and the new attraction will result in the formation of another characteristic molecule—the dioxide of nitrogen ( $2\text{NO}$ ). The diagrammatic symbol on the chart will show the change thus induced. The condition of the other unused bonds still remains the same, and it is fortunate for illustration that the tendencies remain also unimpaired; and therefore a third atom of O may be caused to imbibe two more bonds,

resulting in the trioxide of nitrogen. Thus we may go on adding successively a single atom of O, until at the end all the bonds of the quintivalent are employed, and the last product has swallowed up all the others in the generation of the pentoxide of nitrogen. These several forms of the nitrogenous compounds are presented as gases, but the trioxide and pentoxide will absorb water with that readiness that they are made more familiar to us as nitrous and nitric acids. The reaction in each case is formulated upon the chart.

Other examples will, perhaps, make more plain these interesting features of the atomic law. A molecule of any substance, as a rule, is made up of at least two atoms. Why? The forces which control matter are differentiated. In chemistry we recognize the special form of force as that of affinity or attraction (which also includes repulsion). If an atom, as such, attracts, it must expend its





force upon something outside of itself which is attracted, and this outside something can be naught else than another atom; the opposite polarities being thus balanced, a complete molecule results; for example—an atom of H being univalent, that is, being possessed of, for instance, a positive polarity—it will not retain its individuality, but will join at once, upon its elimination from a compound, another atom of H, which is

negatively conditioned, and with which it readily affiliates to the production of the molecule.

An atom of O, however, may exist as an independency, since by its dual properties, possessing within itself the positive and negative polarity, the bonds of quantivalence are balanced, and the individual atom will be identical with the molecule, which will remain under ordinary circumstances in the condition of comparative quiescence. This current of electrical influence, however, may be disturbed and diverted, as is often manifested under certain circumstances, when the molecule becomes specialized by a tri-union of atoms, and when the polarity or quantivalence is equally shared by the three. The properties of O then give place to those of Ozone.

Diagrams of this, as well as of other structures which are familiar to you, are here presented, showing the comparative complexity of the different compounds. The quantivalence of the several elements are made satisfactorily complete; and though the association of the atoms is arbitrary, yet there seems a perfect fulfillment of the laws to which we refer.

An essentially important point, however, in this building of the molecule, is this: that whatsoever plan of structure we may adopt to represent a given substance, we cannot use the same to symbolize an isomeric compound (*i. e.*, one possessing the same elemental constituents in the same proportion, but having dissimilar physical properties), for the variation of external features implies a different internal arrangement of atoms; but, notwithstanding all the changes and complexities of structure as controlled by chemical force, the law of quantivalence is persistent throughout.

## ESSAY ON CLEFT PALATES.

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Read before the Connecticut Valley Dental Society, at Greenfield, Mass., June 13th, 1877, by Dr. A. F. DAVENPORT, of North Adams.

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MR. PRESIDENT AND GENTLEMEN: Medicine, surgery and dentistry are all based upon anatomy, physiology, pathology and materia medica. Without anatomy, we should not know either the structure of a single tooth, or its connection with the jaw, gums, blood vessels, nerves, etc. Without physiology, we should know neither the natural uses and influences of the several parts just named, nor the relation of the teeth to the whole processes of digestion, assimilation and nutrition.

As pathology bears the same relation to organized structures in an imperfect or diseased condition as physiology does to them in the natural condition, so, without a knowledge of it, neither the physician, surgeon or dentist could know anything of the origin, nature and tendencies of the diseases and defects he professes to treat. The materia medica, in its full scope, includes everything that can be made useful in the mitigation or removal of any of the ills to which man is liable.

These four branches of medical study (if no more) are fundamental, and no man can do full justice, practically, to the most limited specialty, without a thorough knowledge of them all.

Every member of this Association will acknowledge that a dentist should certainly understand the composition, structure and mode of development of the teeth, together with the causes that render their development defective, or induce in them disease and decay. A knowledge of these structures, whether chemically, anatomically or microscopically considered, involves a knowledge of the same structures in all other parts of the body. To understand the development of a tooth and its appendages from materials selected from the blood, involves a knowledge of the blood itself, and all the laws that govern the intricate processes of assimilation, nutrition and disintegration in living structures generally. Indeed, there is not a living atom of our physical organization so isolated, that a knowledge of its structure, nutrition, disintegration and various morbid conditions can be obtained without developing all the essential facts and principles of anatomy, physiology and pathology.

It is an interesting field for physiological research, to understand every slight physiological act and observe every consequent histological condition, from the first appearance of the tooth gum, to its full and complete

development. But this has not been the privilege of any one individual. Sufficient observation, however, has been made to determine the general conditions and the changes which occur during the germination and growth of these organs.

The questions, then, which are of the most importance for our consideration in this connection, are: What are the causes which produce the abnormal conditions of these organs? Where does all this defective dental tissue which we see come from? And what is *the* remedy?

A very important inquiry connected with this subject is the question, In what sense, and how far, does the mother contribute during gestation to normal or abnormal dental structures; and, in this respect, how far may abnormal results be prevented or removed? As maternity is the source and continuance of the nutritive pabulum during uterine gestation, and usually is (or, at least, should be) during the first few months of infantile life, the question arises, May and does not the mental and physical condition of the mother affect detrimentally the foetal and infantile aliment, both in regard to its quantity and quality?

If this question has its foundation in physiological truth, do not such indications call most imperatively upon the medical as well as the dental practitioner to furnish to mothers the instruction requisite to the full comprehension and imperative necessity of supplying themselves during this period with sufficient and appropriate nourishment to insure healthy foetal nutrition? As a defective organization will be produced just in the ratio of a deficiency of those appropriate vegetable and mineral elements which enter into and contribute directly to the formation of foetal structure, I have long thought that we are too much in the habit of looking on the surface of this subject, and standing with folded arms, and often with closed eyes, while millions upon millions of dental structures have gone down to premature graves.

“An ounce of prevention is worth more than a pound of cure.” It was formerly supposed that the dental practitioner must take the dental organs as he finds them, and perform such surgical operations as he may consider best adapted to their preservation and health, entirely ignoring the great truth that it is the paramount duty of the physician and dentist to prevent disease. My impressions are, that our efforts have been directed more to remedying the effect than to removing the cause of this, I might say, national calamity—to the cure rather than the prevention of disease. To find out the real cause of defective dentition and decay, we must consider the fundamental principles and laws of our existence. Physiology teaches us that all vegetable and ani-

mal bodies are composed of gases, liquids and solids of various kinds and properties. The body of man is composed of some sixteen of these different substances, and they are governed by the same natural laws that control them in other forms or bodies. These substances are derived from the air, the earth and the water. Our common articles of food are known as simple and compound alimentary substances, and when taken into the system are converted into blood. The blood *should* contain all the requisite constituents for muscles, fat, bones, etc. But if any of the constituents of which these are formed are wanting in the food, there will be corresponding deterioration in those parts of organs which require them; for the body cannot originate a simple or a compound substance, nor can it appropriate any more of a constituent to an organ than it has received into the system for that purpose; hence the food which is designed to nourish all parts of the body should contain all the constituents of which the body is composed.

The body does not possess the power of converting one elementary substance into another; it can compound and appropriate substances to the various parts of the system, but it cannot originate them. If the mineral element which forms and sustains the hard portion is wanting, those organs will suffer just in proportion to that deficiency. The potter cannot fashion the bowl without the clay, neither can bone be formed without earthy matter. If there be an abundant supply of earthy matter to fully meet the demands, then, instead of soft, chalky teeth, as we now have, they will be dense and firm in their texture, and capable of resisting decay, so long as a due proportion of mineral supplies are kept up. And under ordinary circumstances they will retain their integrity until their supplies are diminished or suspended. Some physiologists claim that the above is incorrect, and think that with a free use of a vegetable diet and animal food we at all times obtain sufficient nourishment for the dental organs, as well as for the whole bony structure of the body. Though we use white bread, and entirely discard the Graham bread and Graham mush of which there is so much said by a class of modern physiologists, claiming that the amazing amount of physical distress and dental disintegration which is met with on every hand does not occur so much from an insufficiency of bone element in our food, as the inability of our physical powers to make use of what we get. But whether your profession hold to the latter theory or to the former, I am not now so fully prepared to say as I shall be when I hear your comments on this paper. Personally I am inclined to the former, believing that when the food does not contain sufficient mineral matter, that the dental tis-

sues may not only be defective, but we may also have congenital defects of the palate. In support of this it is said that ninety-nine per cent. of the lion cubs born in the Garden of the Zoological Society in Regent's Park, London, have cleft palates, so that they are unable to take nourishment, and consequently soon die. At the Dublin Zoological Gardens, however, there are very few such cases. This difference has been attributed to the difference in the food of the parent lions, those in London being fed only on the flesh of large animals, so that they are unable to eat any of the bones; whereas in Dublin a goat twice a week is given them, which they eat bones and all. This provides the bone phosphates needed for the organization of the young animals. Prior to the adoption of this method of feeding at Dublin, malformation of the palate was as common there as it now is at London. This furnishes a fruitful field for thought, and is very suggestive on the subject in hand.

Having spoken of some of the causes which, to my mind, contribute largely to produce defective dentition and cleft palate, and having hinted at the remedy which must be adopted if we would avoid the causes upon hygienic principles which produce these abnormal developments, I now propose briefly to speak of the remedy for congenital defects of the palate.

My experience in staphyloraphy has been too limited to enable me to engage your attention for any length of time. The object to be obtained by staphyloraphy is to improve the articulation or speech, which is more or less defective in every case.

“Dr. Kingsley says that the closing of the fissure by surgical operation, no matter how skillfully performed, and no matter how perfectly the union is made, he believes to be in almost all cases a failure. It may be a surgical success, but it is a practical failure. The objects for which it is attempted are not obtained. I believe now almost every surgeon of eminence concedes the point, and also gives to the dental practitioner the credit of having proved that this operation is no longer necessary.”

When we come to look into the mechanical process of articulation, we find it is produced by the voice or sound issuing from the glottis, and manipulated by the organs between that point and the lips inclusive, and, to a certain but very limited extent, the nostrils.

The palate, I believe, possesses a more powerful influence over articulation than any other organ, unless it be the tongue, and perhaps nearly or quite as much as that organ; for it is the tongue coming in contact with the palate, working against and articulating with it, thus breaking

up the voice, that gives variety. And these sounds come to be understood as language. Now what we are called upon to do, is to supply the loss. I need not refer you to the attempt made in the olden times to fill this fissure by the use of unyielding substances. That subject is more or less familiar to you. The only substance that can be successfully used is elastic rubber. The palate, in order to articulate, must have the power to rise up until the passage to the nares is closed. I am not certain whether that closure is entirely due to the elevation of the palate, or whether, simultaneously, there is a contraction of the pharynx. I think, however, the pharynx meets the palate half way.

Perhaps it might be well for me to state here the reason why I have taken sufficient interest in this subject to bring it before you at this time. It is from the fact that I have for some time past had a patient under my care who has one of the largest fissures of the palate I have ever seen, it being complicated formerly with double hair-lip. Consequently the ideas, suggestions and conclusions are all fresh from personal experience and tests made upon the patient, who is now wearing an appliance I made for her during the past winter.

I have found that the natural vela or palate is continually moving up and down, now closing the passage to the mouth, allowing the sound to pass through the nose, again opening and allowing the sound to pass both ways; then closing the passage to the nares, and allowing only a passage through the mouth; again closing the passage to the nares, and, in conjunction with the lips, allowing the sound to accumulate in the mouth, ready for an explosive sound, as in "B," the air accumulating in the mouth until the cavity is full, when, opening the lips, it makes "B." With "P" there is precisely the same action of every other organ, except there is not the accumulation of sound that "B" exhibits. "M" passes entirely through the nose; instead of the air accumulating, it continues to issue from the nose. In this operation the tongue remains quiet; the lips and the palate do the whole. I find by experiment that if the palate is defective so it cannot close the passage to the nares, and the sound issues there instead of accumulating in the mouth to form "B," it must form "M." We must, therefore, in making a substitute for the lost organ, make something that shall close the passage. This is the reason why I have found the operation a difficult one. The artificial palate must be made to accomplish the purpose, and be under the control of the muscles in such a manner that it may be elevated and depressed by the remnants of the lost velum, and at the same time admit of the contraction of the sides of the fissure, or deglutition will be interfered with.

I found it greatly to my advantage, for the sake of experiment, as well as for convenience, to make my obturator and velum in separate pieces. I also have made several vela for this patient, varying each in some particular, and at the same time testing each, until I find that I am not able to go below the base of the uvula, and, owing to the lack of muscular power in the remnants of the natural velum, and also a weakness in the superior constrictor of the pharynx, I found it necessary, after coming to the base of the uvula, to reflect it back horizontally, so as to be out of the way of the food, and let it terminate in a thin and delicate edge—otherwise it would not close the nares. The posterior border is dropped a little, so that when the pharynx contracts it shall come against a curved edge. This I found necessary in order to produce perfect articulation, and also that it may not irritate the walls of the pharynx.

To make this instrument embrace the sides of the fissure, and at the same time provide for the contraction of the sides of the fissure in deglutition, has caused me great solicitude. I find in actual practice, that while all the edges must be delicate to prevent irritation, all the other parts must be just as firm as they can be made, and at the same time allow of an easy movement of the muscles. Firmness seems necessary, that the tongue, coming against it, may not drive it out of the way, but hold on long enough to get ready for the sound. In the letter “K” the sound is made by the hard, firm pressure of the palate and the tongue in conjunction with each other, the pharynx also acting with them. From all the information I can gather on this subject, I find we cannot look for immediate results in articulation, as all the muscles are trained to speak without the aid of the lost organs. Perfect articulation, then, can only be obtained by long persevering and continued practice. Since this patient has been wearing the appliance, I find a marked improvement in the articulation, and almost an entire absence of that nasal tone which always characterizes cases of this kind. I have found a difficulty with this patient which I do not understand. She does not seem to be able to distinguish the difference in the articulation of her own voice. This seems to be a serious barrier in regard to correcting the speech. Whether this is due to an absence of the Eustachian tubes or from any other cause I am not able to say. I have found, upon examination, that the Eustachian tubes (so far as I can judge) are present. Therefore my conclusion is, that the difficulty alluded to is due to some other cause. All the models of the lost organs I have duplicated in type metal, which I have brought for your examination. This is necessary, in order that the instrument may be duplicated at any time as soon as

deterioration commences—this soft rubber being a perishable substance. And, from all the experience I have had with soft rubber, we cannot expect the instrument to last more than from three months to a year. Hence the necessity of metal models, that duplicates can be furnished the patient at any time.

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## THE CONSERVATION OF VITAL FORCE AN ESSENTIAL ELEMENT OF CONSERVATIVE SURGERY.

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Read before the Detroit Medical and Library Association, by Dr. THEODORE A. M'GRAW.

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The tone assumed by certain authors on this subject might lead the student to believe that the very idea of conservation in surgery was peculiar to this generation. Nothing could, of course, be more false or contrary to established facts; for there has never been a really great surgeon who did not seek to enlarge the scope of his art by discovering new methods to save deformed, diseased and injured limbs, and make them useful to their owners. If we have been able to step in this direction a little in advance of our immediate ancestors, it is because we are now reaping the results of their ideas and labors. It may, too, be barely possible that certain modern methods of treatment have been trumpeted to an extent not warranted by actual experience. They have, beyond all question, in many cases, when unsuccessful, caused the loss of many human lives, as witness the unfortunate and disastrous attempts made during our late war to save compound fractures of the femur from amputation.

The present impulse to conservatism originated in Germany about the time of the Schleswig-Holstein war. The German surgeons, working with every advantage, having abundance of supplies and short lines of transportation, were successful in saving many limbs which would have been doomed in former wars to amputation. The triumphant publication of their successes was followed by renewed efforts on the part of surgeons of all countries to make resections take the place of amputations in the treatment of diseased limbs. This impulse gained a new momentum from the spread of new doctrines of pathology as respects certain diseases of the spongy bones and joints. For when surgeons once conceived the idea that Potts' disease of the spine, hip-joint disease, white swelling of the knee and ankle, were essentially of inflammatory

character, they became seized of the impulse to try and effect their cure by treatment appropriate to an inflammatory affection. A certain success followed this movement—a success which has doubtless been somewhat overestimated. It, nevertheless, has had a very important influence on professional opinions, for this, together with certain advances in our knowledge of the nature of congenital distortions, made it possible for very timid surgeons to do good work in orthopædic surgery, by the careful and skillful adaptation of splints. This class of men, working usually in their own institutions, with the great advantage of being able to keep their patients under constant personal supervision, have often succeeded, by slow, laborious and patient effort, in vastly improving many defective and crippled joints. Themselves dreading all operative measures, and utterly unable to realize the difficulties which beset surgeons who have to treat such patients at their own homes, they naturally began to decry surgical operations as unnecessary and cruel. This led to a gradual, but very decided change, in the meaning of conservative surgery. For, whereas, a few years ago, surgeons were considered as conservative who saved limbs from amputation, whether by operative or any other measures, they are nowadays regarded by many as radical and extreme if they do not postpone operative proceedings until the patient is nearly moribund.

This unphilosophical view of operative surgery may be tolerated in the laity, whose dread of the knife is natural, though often unreasonable; but on what grounds can it be excused in medical men, whose duty requires them to judge of remedies by their efficiency, rejecting none from sentimental considerations nor cowardly fears? The ultimate object which surgeons should have in the treatment of diseased limbs should be not only, nor even chiefly, to save a limb, but rather to so handle the case that the organism, as a whole, should receive the least injury. Now I cannot doubt, from my own experience in military surgery, that a hand or a foot may be purchased too dearly. I have seen, for example, men who, years ago, in the *furore* for conservative surgery which prevailed in the war, suffered gun-shot fractures of the femur and recovered. I have yet to see one whose constitution was not broken by the effort to save the limb. There is something which is worth more to a man than any one member of his body—it is the vital force which gives elasticity to youth, vigor to age and zest to life at all ages. If not as tangible, it is nevertheless as positive and definite a something as an eye or a leg. A cripple, having it, will live more happily than unamputated men whose vital energy has been exhausted.

I think, therefore, that we should first ask of any mode of treatment, whether it will preserve vital force, and, after that, whether it will save injured limbs. Now it is well known that men may suffer amputation with very little loss of constitutional strength, provided only that their stumps heal kindly. Surgical operations in general do not seem to make much drain upon the reserve force of an individual, however much pain or immediate danger may ensue. If recovery takes place early, and without much suppuration, the patient will usually, in a short time, regain his pristine vigor. That which saps the vital force, and imposes upon youth the decrepitude of age, is long confinement to bed, continued deprivation of air and exercise, habitual pain and suffering, frequent hemorrhages, and, above all, profuse and long-continued suppuration. *Prima facie*, therefore, in those cases where the same end may be accomplished quickly by a surgical operation, or slowly by mechanical means and medical treatment, the bolder measure would seem the more justifiable. I have, for convenience' sake, spoken of vital force as an entity. Whether this be so, or whether it consists, as I believe, in the utmost perfection of the minute organization of the most important viscera, is, for our present purpose, immaterial. The important thing is that we study the conditions of its preservation or loss, and bear them in mind in our surgical plans and procedures. They certainly ought not to be forgotten when estimating the value of the various attempts at conservative surgery which have of late years occupied the attention of many medical men.

The great wars of the last fifteen years have made many opportunities for surgeons to test their theories on a large scale. The actual results of their practice would, it is plain, be a better criterion of the value of their methods than any accidental successes on a smaller scale could possibly be. Just what the ultimate conclusions of the medical world as to the value of expectant practice in gun-shot fractures, or of excisions, as practiced in cases of compound fractures of the joints or long bones, will be, is, at the present time, impossible to say. My own judgment of the value of such modes of treatment is founded upon very many observations made in the military hospitals at Chattanooga during the period intervening between the battle of Chickamauga and the close of the war. I had then the opportunity of watching cases of wounds of all sorts for many months together, and had occasion to see the disasters arising from ill-judged attempts of conservatism, as well as the successes achieved, in proper cases, by surgeons of ability and experience.

Expectant treatment of wounds of bones and joints was rarely success-

ful. Even those cases where bones had been merely bruised by bullets required, in the end, the use of the gouge or chisel before complete and final recovery was achieved. Resections of the bones and joints of the upper extremity were so often followed by very excellent results, as to establish the operation as one of undoubted value. It may fairly be said that no arm or hand ought ever to be amputated on account of gun-shot or other compound fracture, when only one bone is involved, and when there are no other complications. In fact, the circulation of the upper extremity is so good that the surgeon, under favoring circumstances, may sometimes undertake to save the injured limb, even when the injury is complicated with wound of main artery or vein. Should amputation be afterwards required, it could still be performed with good hope of recovery. As regards resections of the humerus, better ultimate results might have been attained had surgeons waited longer before operating, for very many cases of primary operations recovered without regeneration of bone. Had the shattered bone been left until the detached periosteum had become stimulated to cell growth by the irritation of the fragments, a firm, bony structure might have replaced that which had been destroyed.

Exsections of the lower extremities have not been followed by nearly so good results. Those of the ankle were most successful, although even then the spread of caries most frequently baffled the efforts of the surgeon. Under present methods of treatment, however, much better results might be anticipated than were actually obtained during the war. I have but recently discharged a patient from Harper's Hospital who illustrates forcibly the effectiveness of the seton method of treatment for compound fractures of the joints. He is a young German, through whose foot a charge of fine shot passed, discharged from a gun at very close quarters. The charge entered the inner edge of the foot between the astragalus and os naviculare, and passed directly through, emerging at the lower edge of the foot below and behind the external malleolus. The astragalus and os calcis were badly shattered, and the wound full of shot, wadding, fragments of bone and powder. I passed oakum strings through, as recommended by Dr. Sayre, and kept up a free channel for the discharge of pus and débris. The oakum strings were gradually diminished in size, then replaced by silk and finally by silver wires. He recovered completely, with absolutely perfect motion of the foot. Gun-shot fractures of the tibia or fibula may sometimes, if not too extensive, warrant exsection. In such cases the broken bones must be left in situation long enough to cause a regenerative process by the periosteum.

Otherwise there would be no replacement of the lost bone. In general, however, gun-shot fractures of the leg ought to demand immediate amputation, if not in civil practice, at least in military, for patients suffering from such injuries most frequently die of exhaustion before recovery can take place. Gun-shot fractures of the knee joint will always demand amputation, which in military practice ought to be primary. I have seen very many such cases, and never yet one of recovery. The only case of recovery of penetrating wound of the knee joint which I have ever seen, was one in which the ball had passed through under the patella without touching the bones. The probe was passed through the two wounds, and there can be no doubt that the joint was penetrated; but the wounds healed, nevertheless, by first intention. The experience of surgeons in the last war between France and Germany was very unfavorable to excision of the knee for such injuries, and most all such operations were followed by the death of the patient. The same result followed excision of the hip. But as almost all patients whose severe wounds required such an operation died under whatever treatment was instituted, it may yet be justifiable for surgeons to try it again as a possible means of saving life. The continued attempts made by surgeons in our late war to save broken thighs, even after the experience of two and three years had demonstrated, beyond all doubt, its futility, are, to my mind, a shame and reproach to American surgery. I saw such cases by the hundred in Chattanooga hospitals. They came to linger for months in the wards, and after suffering horrible torture to die of exhaustion or blood-poisoning. Of such patients, scarcely five per cent. recovered at all, and what a recovery was that which left a man, drained of all his vitality and vigor, to drag around a neuralgic and nearly useless hip! As examining surgeon for pensions, I have, since the war, had occasion to note both the relative infrequency of pensioners who have recovered from such injuries, and the terrible price which the few have paid to secure a very doubtful blessing.

It will not do, however, to be guided too closely by military experiences in civil life. The prognosis of all injuries must manifestly be better with well-fed citizens in their own homes, and attended by a multitude of willing friends, than with soldiers who may have suffered the privations of a campaign, and whose wounds have to be dressed in infected wards by overworked surgeons and nurses.

The well-established fact, too, of the lesser mortality of any secondary amputation in civil practice would, of itself, lead a surgeon to avoid the greater risk of primary operations, so that we may be justified in at-

tempting many things in conservative surgery with civilians which ought never to be undertaken at all in the practice of war. Children, too, will, it must be borne in mind, recover when adults would not, and only the worst cases of compound fracture occurring in childhood should warrant amputation of an extremity, before every effort had been made for its salvation.

The treatment of those inflammations of joints which occur so frequently among scrofulous children, has formed a very important feature of modern conservative surgery. I coincide thoroughly with Dr. Sayre in the belief that the chronic affections of joints, such as hip disease, white swelling of the knee and ankle, Potts' disease of the spine and the like, are essentially of inflammatory character. I differ with him, however, in the belief that healthy children are equally with scrofulous children subject to such trouble. I see in the public dispensaries connected with the Detroit Medical College, and in private practice, annually, from thirty to fifty such cases. I rarely find one in which there are not other evidences of constitutional disease besides that exhibited in one joint or one diseased bone.

As regards treatment, there can be no question that the local treatment ought to be that adapted to an inflammation of the joint. It ought to have rest and protection from injury. The accomplishment of these indications, however, is exceedingly difficult. The application of splints to make extension and counter-extension is, in general practice, of frequent benefit—but often instruments fail to give the relief we hope for.

The results attained in orthopædic institutions are no criterion of the value of modes of treatment in private practice. A mechanical surgeon, with his own manufactory of splints, and with his patients under his absolute control, can achieve with mechanical means what cannot be done by the same means under other circumstances. It is almost impossible in private practice to control patients for the length of time which is required to effect a cure of these terrible cases. The best success may be obtained in Potts' disease of the spine. The application of Taylor's splint has usually given great relief and often stopped the progress of the disease. It has, however, in some cases in my hands failed completely, and I have had to apply other means of support. The use of a plaster of Paris corset, as recommended by Dr. Sayre, would seem to offer a cheap and efficient means of treatment for this disease. My own experience in it is too limited to enable me to speak definitely of its value.

The modern modes of treatment of hip disease, by extension and separation of the joint surfaces, are undoubtedly correct in theory. Practically they often fail, from the inability of patients to endure the pressure of the counter-extending bands, or the irritation of the adhesive plaster on the skin. I have overcome these difficulties with well-to-do patients sometimes by having them use a variety of splints, which would have different points of resistance. By alternating a Sayre's splint with Taylor's or with a crutch-shaped splint, a patient may obtain relief from the irritation produced by perineal pressure. Where adhesive plaster has produced an undue amount of irritation, the extension may be made for a short time by attaching the lower end of the splint to the sole of a high shoe. This kind of extension, however, pulls too severely upon the ligaments of the knee to be endured for a great length of time. A great practical objection to the treatment of hip-joint inflammations by splints is its expense. Even the first expense of such an instrument is a considerable burden to poor people; but when to that is added the cost of repairs, and eventually, if abscesses occur, that of a new splint adapted to the further progress of the case, the treatment has often to be abandoned for want of means. I am confident that were the professional public opinion as to the value of this treatment of hip disease to be decided by surgeons in general practice, instead of orthopædists by specialty, the verdict would be that it was highly unsatisfactory, and that as yet no treatment has been devised which meets the actual necessities of the people. The plea which specialists advance, that such cases ought to be sent to their institutions for treatment, will not bear criticism; for the rich, who have plenty of means, can be treated at home. It is the poor, who cannot afford even the cost of splints, not to speak of the expense of maintenance in expensive orthopædic asylums, who furnish the great mass of these cases. Where abscess and ulceration has taken place, I cannot too highly commend the dictum of Dr. Sayre, that a surgeon ought not to wait many weeks, if improvement does not take place, before excising the diseased bone. Not but that such cases will frequently eventually recover under the tedious and painstaking application of appropriate instruments; but the recovery is purchased at the expense of an enormous amount of vital force. Excision of a carious hip joint, if undertaken at an early period of the disease, is by no means so shocking an operation as is usually supposed. There is no great shock experienced by the system in cutting through bone which has become soft and friable by disease, and if the statistics of the operation are bad, it is, I am convinced, because surgeons have foolishly postponed its execution

until the kidneys and other viscera have become diseased, and the patients have become nearly moribund.

The removal of the diseased bone is, with patients of unimpaired constitution, a relief from suffering and exhausting suppuration. The wound usually heals in a few weeks, and the patient is in the end infinitely better off than if his recovery had been prolonged through many months of wretchedness and pain, in order to escape the much-dreaded operation.

Chronic knee-joint inflammations are even more to be dreaded than hip-joint disease. It is even more difficult to cure, and includes very many more patients of adult age. The treatment by extension has in my experience been not at all satisfactory. Neither is there the same necessity for extension as in the hip joint; for while the powerful muscles around the latter joint, by their reflex contraction, jam the two small opposing surfaces of the joint into violent contact, the knee is comparatively independent of such influences. It has, in the first place, very large surfaces, over which any such force is distributed—and, in the second place, the reflex irritation of those muscles of the ham which alone seem to suffer in disease of this joint, do not tend to force the joint surfaces together, but, as is well known, to pull them apart, causing a spontaneous partial dislocation of the knee backwards—so that while we apply extension in the hip to relieve a cause of inflammation—namely, the pressure produced by muscular contraction—we need in the knee to use it for the sole purpose of preventing deformity. It is furthermore not possible in the early stages of joint disease to separate the joint surfaces by extension. The ligaments are unyielding, and only give after they have become softened by disease. It is my belief that a plaster bandage and abstinence from walking on the foot will do all for such cases that can be done by an extension apparatus. Excision of this joint is of more doubtful propriety than of the hip or ankle, but is followed by sufficiently numerous recoveries to warrant its attempt when other means have failed.

I have failed utterly in the application of extension apparatus to the ankle. A plaster bandage producing absolute rest and equable compression is to my mind the best mode of treatment. If the diseases run on to suppuration, the early evacuation of the pus, the removal of all diseased bone and the passage of setons through the wounds seems to be the best mode of treatment.

The treatment of club-foot and allied deformities ought not to pass without notice. Some surgeons have taken great glory to themselves,

because they have succeeded in stretching the tendo achilles, and thus avoiding the terrible operation of tenotomy. To me this kind of glorification seems very absurd. The operation of tenotomy is one of the simplest in all surgery, and is rarely followed by any ill results whatever. Now in new-born infants the tendon may often be stretched without any difficulty whatever, and the deformity cured by very simple means; so also with acquired cases of short standing. But with congenital cases of two or three years old, the stretching of the tendon is a very long, very tedious and very painful process, a process which must cause more injury to a child, twenty times over, than the simple subcutaneous division of the contracted structure. The actual ends accomplished by the loud blasts which some surgeons have seen fit to issue against this little operation, have been the injurious postponement of the cure of such deformities to a period when the bones had become altered in shape, the ligaments contracted and dense, and the paralysis, if such exist, confirmed and incurable. It is a well-established fact that club-foot is usually a result of paralysis. One of the first indications, therefore, of treatment should be the recovery of those paralyzed muscles. Their long-continued extension, kept up by the contracted conditions of their opponents, is a great hindrance to their recovery. Sound pathology would therefore indicate the necessity of speed in overcoming this contraction, and there is no method so speedy as tenotomy. The treatment of these deformities by such methods as have been recommended by Prince and others, in which apparatus has to be daily adjusted to the foot by the surgeon himself, or a skilled assistant, is out of the question with the general practitioner. It is easy to say that time ought to be of no consequence compared with the cure of the case, and few men have the hardihood to oppose an assertion which would seem to be dictated by considerations of humanity. But in fact, time is of great importance to the practitioner of medicine. There are but twenty-four hours in the day, and no man of extensive practice can afford to give too great a portion of time to a single patient. Besides, patients themselves can rarely afford time for daily treatment, and methods which require it can never be of general avail. A similar criticism might be made upon all of those refined methods of treatment by which surgeons undertake to arrange cords for traction in the direction of the paralyzed muscle. Elaborate and complicated shoes can never work in general practice, for a surgeon who is not a special orthopædist requires what has not yet been invented—a simple method of treating club-foot, and a simple shoe, which will be sufficiently effective, and yet which can be readily

made by a village shoemaker, and as readily put on by the father or mother of the patient.

I have tried in this paper to illustrate the principle, which seems of late years to have been almost forgotten in our surgical practice, namely, that time is of the utmost importance in the cure of diseased conditions. It is not an indifferent matter whether a child recovers from hip disease in three months or three years, or whether a club-foot is brought in proper shape in four weeks or twenty. Speedy cures mean often more perfect cures than delayed cures, for delay in very many cases causes secondary troubles, which may eventually kill the patient. In all cases it renders it more difficult for the organism to revert to its normal condition. Now surgical operations are of that great service, that they hasten the event, often curing in a few days or weeks what it otherwise would require months or years to accomplish. I have therefore desired to call your attention to this important part which operative surgery plays as an agent of the conservative surgeon.—*Detroit Medical Journal*.

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### “A CASE IN PRACTICE.”

By F. F. DREW, D.D.S., Baltimore, Md.

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A rather remarkable case came under my observation a short while since, and thinking it might be interesting to the readers of the MISCELLANY, I have concluded to report it.

Miss M——, a young lady about nineteen years of age, dressmaker by occupation, called to consult me in reference to a large and painful swelling in the right ear. Upon inquiry I learned that she had been suffering for about three weeks the most intense agony, and thinking the trouble might proceed from a defective tooth, had applied to me for relief. Upon examination of the mouth, I discovered an exposed nerve in the superior second molar, on the same side as the affected ear. I could discover nothing abnormal about the Eustachian tube nor any adjacent organ. Externally the ear was very much inflamed, painful to the touch, and swollen. She complained of a continuous dull pain in the head immediately over the ear, and at night this pain became acute in character, and, to use her own words, “almost drove her mad.” In consequence of having lost so much rest, she had become very much reduced in flesh and strength, and, when I saw her, presented a decidedly anæmic appearance.

By way of treatment, I suggested to her that the trouble might *possibly* come from the decayed tooth, and advised its extraction. To this she would not consent, but begged that the nerve might be destroyed. Considering her debilitated condition, I yielded a reluctant consent, made application of nerve paste and discharged her. In the evening I was sent for by the patient, who desired to know if she might not remove the cotton from the tooth, as she was suffering *untold horrors*, not only in the tooth, but in the *ear* also. Attributing this to the action of the nerve paste, I sent her word not to remove the stopping under any consideration, and that the pain would soon subside. On seeing her next morning, she stated that she had followed my directions with the result predicted, viz., cessation of pain in the tooth, and immediately following this *an abscess broke in the ear*, succeeded by a discharge of blood and pus, and attended by *marked* relief of pain in that organ. At this sitting her ear was very much improved, not only by a diminution of pain, but by swelling and redness also. I, of course, found the nerve entirely dead—removed it, and filled the tooth temporarily. It has been one week now since the above operation was performed, and she has had no return of the ear trouble, so I think it very probable that her recovery was due to the destroying of the nerve in the tooth, thereby showing a tendency to neuralgia.

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## ANÆSTHETICS.

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TO WHAT EXTENT IS THEIR USE JUSTIFIED IN THE PRACTICE OF DENTISTRY?

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Read before the Ohio State Dental Society, by J. H. SIDDALL.

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*Discussion concluded.*

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Dr. Rehwinkel : Mr. President, I have listened to the remarks of Dr. Watt with a great deal of interest, and if every one was a *Dr. Watt*, there would be less difficulty in administering anæsthetics; but as he is one in a thousand, it is well enough, in considering this question, to look also upon the dark side of the picture. When giving an anæsthetic there are a great many things to be taken into consideration, a great many things influencing its operation, either for good or ill, one of the principal of which is, the state of mind in which the patient may be at the time, whether in a cheerful or depressed condition : surrounding circumstances also must be taken into account. Dr. Watt has perhaps, in the highest degree, the requisite qualifications for giving anæsthetics; quiet and pos-

itive assurance, and determination, combined with kindness—the manner which gains the confidence of all equally, whether acquaintances or strangers—and this is the chief requisite for one who proposes to administer anæsthesia. In giving anæsthetics to children who have never been deceived, who have no theory of their own, who do not enter into speculations as to the effects of an anæsthetic, as do most adults, I have never known any serious trouble to arise. The most difficult cases I have met with are those of hysterical women, especially such as have strong wills, and who feel prejudiced against, and are afraid of anæsthetics, and are yet determined not to submit to even light operations without being narcotized to full insensibility. This is a most unfavorable condition of mind for a successful administration of either nitrous oxide gas, chloroform or sulphuric ether. Fear of danger from the effects of the anæsthetic agent, and at the same time a want of faith in the willingness of the administrator to assume the responsibility of putting them into a state of complete insensibility, combine to cause them to doubt all assurances, and to disregard all advice concerning inhalations and exhalations. From the first there is a battle going on in the patient's mind as to whether or not she is going to be deceived, perhaps rendered powerless but not unconscious, and yet at the same time dreadfully afraid of becoming so—the whole power of the will being thus against you, the case is rendered exceedingly difficult. They do not breathe well, do not exhale well, do as little of either as they possibly can. The way to overcome this difficulty is, if possible, to establish confidence between operator and patient; if this can be done, all will go well. Dr. Watt spoke to-night of perfect anæsthesia with perfect consciousness. This may sound peculiar to many, but I myself have known such cases, but I do not believe they ever occur unless there is thorough confidence and good understanding between patient and operator. In reference to chloroform, I would say, there was a time when I thought no more of administering chloroform to a person, than I would now in giving an ordinary drink of brandy or whiskey. That time, however, is past, and the more I know of chloroform, the more I hear and read about it, the more I am afraid of it. I do not think myself justified in using it in extracting teeth, habitually, and scarcely occasionally, but circumstances may arise in which its use may be justifiable. This, however, can only be determined by the operator himself, and not by any resolutions or rules promulgated by any society whatever.

When first introduced, in 1847, chloroform was largely given, both here and in Europe: many times, indeed, in trivial cases, and also only

as an experiment. A number of years passed by, in which no fatal cases occurred, or at least none reported. Then a death from chloroform took place, then another and another, and so on, until we can scarcely pick up a medical journal, but that we read of fatal cases of this kind; the inquiry naturally arises, Why should we now hear of so many fatalities of this kind occurring, when we know so much more about the preparation of anæsthetics and their proper administration than we did twenty-five or thirty years ago? Of course a great many speculations and theories are indulged in. Some allowance is to be made for the fact that every fatal case which now occurs is telegraphed over the country, but that is not in itself sufficient to account for the difference between then and now.

It is now an established fact that chloroform is a dangerous agent to handle, and he who takes it is fully cognizant of the fact that he almost takes his life into his own hands. That is the impression made upon the mind, and which, probably, remains as long as the person is conscious. Whether this is a psychological impression or a psychological truth I do not know, and do not intend to theorize about. But the more I know about chloroform, the greater the number of fatal cases that come to my knowledge. Whether there is more fear in the mind of both patient and operator, which tends to increase the number of such cases, I do not know. Another matter in connection with this is that, upon the point of recovery, you will find patients in a state of great fear and excitement lest they shall not be able to bear the effects of the agent, when, in fact, they had borne the chloroform very well, but were entirely unconscious that the operation was over, and were still dreading everything; sometimes relaxation will be so great that the patient sinks right down. When there is this danger it is well to let them think that the operation is yet to be undergone, and they will gradually recover their full powers, with the dread acting as a stimulant.

I agree with Dr. Watt, that the practitioner should be prepared to administer anæsthesia instantly and safely, whenever a case requires it, instead of not using it at all, and sending patients away to those who might not be as well fitted to give it as himself. I use nitrous oxide—the compressed nitrous oxide—whenever I have occasion for an anæsthetic; but as a general thing, unless the operation is very severe, and unless it is almost impossible to get along without it, I throw every obstacle in the way of using it. Every time I am compelled to give nitrous oxide I do it with reluctance, but at the same time acknowledge that there are cases when we cannot well do without it—where it is well

that we should both have and administer it. This is so well understood, that the profession everywhere regard it as a desirable thing to take up and improve upon methods of local anæsthesia.

A great many things are recommended for local administration. We have ether spray, electricity, and other things. On the desk I see a preparation which is highly recommended, and I think as good as anything known to the profession. But then the condition I spoke of at the beginning of my remarks applies just as well to that as to anæsthesia proper. If you have a man full of enthusiasm on the subject to talk to your patients until in the condition of mind necessary; the effect would, no doubt, in a great number of cases, be much better than it now is. I have no doubt that the effect of the agent is in a measure determined by the ability or non-ability of the operator to impart to his patient faith in its efficiency.

Coming to general surgery, a paper was read this evening in which there was a very severe stricture upon the medical faculty. I think it was very unjust. We would not like to have some gentlemen whom we hardly recognize as practitioners, picked up and placed before the world as examples of our profession. It is true that a man having little to do with anæsthetics probably does not know much about them, excepting what he may have read. It is not right to judge the medical profession in that way, no more than to judge of *us* by some men running around loose and calling themselves dentists.

To be severe on the medical profession will not do, for another reason—it cuts both ways; for, though they may not have studied the effects of different conditions of teeth on the system, in the present state of the profession we cannot claim that we understand matters pertaining to their department any better than they do those belonging properly to ours. There are individuals in our profession who know more of their profession than many of them know of ours, but when you talk of taking the whole dental profession and placing them by the side of the medical, it becomes a matter of doubtful expediency.

Dr. Watt : I rise to a personal explanation. In going through that catechising, I think, perhaps, I left the impression that ordinarily I used nitrous oxide or that I frequently used it. I suppose that I extract forty or fifty teeth without using it for every one I extract with it. I feared I had left the impression that I used it almost invariably.

Dr. J. Taft : This subject is one in which I am much interested; though I have never engaged very much in the use of anæsthetics, I have experimented a little with almost everything that has been present-

ed. I have experimented a little with sulphuric ether when it was introduced first, then with chloroform and afterwards nitrous oxide, but I never used any of them enough to say that I have had much experience with general anæsthetics. Two or three considerations have kept me from using them. I have always felt that I did not know enough about them. I was not able to learn enough about them under the circumstances in which I was placed to warrant me in making general use of them, especially when I heard of serious results in the hands of those who I thought ought to have, under the circumstances in which they were placed, a great deal more knowledge about them than I did; felt deterred from the use of chloroform or ether—but especially chloroform.

Some things have been said with regard to ether and its injurious results that should induce caution in its use. I have seen some unpleasant results from the use of ether, such as would deter me from its general use. A few days ago I was called to go with a physician who was to administer ether, and I to extract the teeth. I went with him and he commenced the administration of sulphuric ether very bunglingly, as I thought, and brought the patient into a semi-unconscious state, during which she went almost into convulsions, and was kept in that condition almost an hour, without any possibility of getting the mouth open or getting her brought to entire unconsciousness. He went on working all the time as vigorously as he could with the ether. We had to abandon the case so far as extracting the teeth was concerned. Even when she was half conscious no effort that we could make would open the jaws; they were clinched together, and we could not get the mouth open. She lay all that afternoon and night under the effects of the ether; the next day she was recovered sufficiently to come to my office, and without hesitation she took the chair and the teeth were extracted without difficulty, and without an anæsthetic. After the operation was performed, "There," said she, "I suffered infinitely more in your trying to get me to take that ether yesterday and last night than I have in your taking out these teeth." Things of that kind have deterred me, though I think I could have administered the ether better than he did, though the physician was thought to be a very good one, and is in good standing. I have desired very much to know the nature of the action of these agents, physiologically, but I do not know anything about it yet, and I do not know whether anybody can give me any information in regard to the action of any of these agents used to produce anæsthesia. I think every now and then that I will take up nitrous oxide and use it, but there are some unpleasant features about it. Of course, in the office

I content myself, and have for several years, mainly, with local anæsthesia, when I thought proper and best to use it, and in many cases have succeeded very well with some local anæsthetics.

There is a method of producing anæsthesia practiced by Dr. Bonwell, of Philadelphia, the philosophy of which is that anæsthesia may be produced by the rapid breathing of atmospheric air for a few moments. An effect may undoubtedly be produced in this way. I have not experimented enough upon it to know much about it. His statement seemed to me extravagant, and yet some persons upon whom he had performed are very enthusiastic in regard to it, and said that they had not a particle of pain during the extracting of teeth. I spoke to Dr. Garretson about it and he confirmed all that Dr. Bonwell claimed for it. I do not conceive that any serious results could be produced in that way, to whatever extent it may be carried; one other person made about the same statement to me, but on the other hand there are those who say there is nothing in it; that it is all bosh.

Dr. Watt: Did he claim that it produced anæsthesia?

Dr. J. Taft: His claim is that persons may be brought into such a condition as to feel no pain whatever in the extraction of teeth or any operation, although they do not lose their consciousness. I am desirous to know more about this than I do now.

With regard to local anæsthesia, I feel perhaps that we do not avail ourselves of all that is practicable in that direction. I would say, however, in reference to general anæsthesia, that the profession ought to take it up and study it more thoroughly than hitherto. Some have simply heard of it, but have never seen nitrous oxide administered at all, and know nothing about the process of making it, except what they have seen in some statement about it, and who know nothing in regard to administering, except as they get the apparatus and go to work and find out what they can. Now, a large number get their knowledge of it in this way. What would we think of an analytical chemist who would simply go and get one book and read that, and then proceed to practice general or analytical chemistry? We would say he would fail, of course. Now, in order to make a success, persons must familiarize themselves with their subject, and must go to some one who understands the subject, and take lessons from him and learn how to prepare it and then how to administer it. Then beneath all that, let us get this knowledge of the physiological conditions and actions, and the pathological conditions; these must be well understood in order to properly administer it. In any case, that should be possessed in addition to the other knowl-

edge. Now, when we know that these are not possessed by a large majority who are using it, is it any wonder that mistakes are made. Is it not a wonder that more people are not injured by it, and a great many killed by it? When we take into the account these facts, is it not remarkable that more injury is not done than appears?

Dr. Watt : There have been some fatal cases resulting from the use of chloroform.

Dr. Taft : Fatal cases have resulted from the improper administration of beef-steak. If our cooks were as ignorant of the preparation and administration of beef-steak, as some dentists we wot of are of anæsthetics, there would be great mischief done by the use of beef-steak. If I were ever to take up general anæsthesia, I would go somewhere and learn all I could about it. I think, perhaps, nitrous oxide is the safest anæsthetic we have. I have been reading on the subject for years, and yet I would not now get an apparatus and use it, either in the liquid or other form, without going and learning how to use it, and then I should be very cautious.

Now, in regard to local anæsthetics, I use it in many cases with decided advantage. I have been in the habit of using—and I got the idea from Dr. Watt—a preparation of aconite, chloroform and belladonna. I have used this upon the gums for a number of years. It is applied with a sponge upon the gums each side of the tooth, and hold it for a minute or two, and then the extraction performed. In many cases, when properly used, it mitigates pain very much indeed. I have used the tincture of the root, equal parts of aconite, belladonna and chloroform. I use it always in opening abscesses, where painful and deep incisions have to be made. This is many times as painful as taking out a tooth.

Dr. Watt : I use a pain obtunder sometimes.

Dr. Taft : I often use that instead of the preparation just referred to. I have used it many times with good results; it is as prompt as aconite. I use several such preparations and would not be without them. An instrument has been devised and made for applying such preparations, which serves the purpose admirably. Local anæsthetics are very useful, sometimes, and I do not think we ought to forego the advantages arising from their use. I had a case some days ago where there was a deep abscess at the roots of the lateral incisor; the parts were much swollen and it was exceedingly sensitive, so that if it was merely touched the patient would wince and cry out. Dental pain obtunder was applied for a few moments, which so reduced the sensitiveness that an incision half to

three-fourths of an inch long was made, and he didn't wince or move while that was being done. This simply illustrates how we may derive benefit from these things, if they are used properly. Sometimes we discard good things because we are prejudiced against them, and our patients suffer unnecessarily.

Dr. Horton : Mr. President, I want to say something upon the subject of anæsthetics this evening, for I fear I may not have an opportunity in the morning. I have used anæsthetics in my practice for many years. Many years ago I used ether and chloroform, sometimes the two mixed, but oftener one or the other alone. For nearly ten years past nitrous oxide gas has been the principal agent used for producing general anæsthesia. I have never advertised the fact through the papers or by hand bills that I used nitrous oxide gas for that purpose or for any other. When the furor first began, I concluded to wait until more was known about it, and particularly the process of manufacturing it, and did not see any apparatus which I thought would answer the purpose until in the summer of 1866, while the American Dental Society was holding its session in Boston, Mass., I visited the rooms of A. W. Sprague, and thought, on seeing the apparatus generating the gas, that I had found what I had been looking for. I did not purchase until the following year, fearing that perhaps something might possibly be discovered that would answer the purpose better. But, in the meantime finding nothing which in my opinion was equal to the Sprague apparatus, in the summer of 1867 I purchased one, and have used the same from that time to the present.

Having an apparatus in complete order, the next step is to obtain pure nitrate of ammonia. This can, at the present time, be obtained at any first-class drug store. On the purity of the nitrate of ammonia depends the quality of the gas produced, and hence great care should be used in this regard. Having charged your retort and made everything ready, just here comes in the necessity of caution, which is to be continued during the whole process, until your gas receiver is full.

Care should be taken not to overheat the nitrate of ammonia, for if it be ever so good, by overheating it takes another part of oxygen, and your product becomes something else than what you want, and the administration of which will produce anything but the pleasant results desired. I make no secret of the manner in which I use my apparatus, and have shown, and am willing to show to any member of the profession who will take the trouble to come to my office, the precise way in which it is done. Whoever undertakes to administer and make nitrous

oxide gas, must "in patience possess his soul." It is a very simple thing to do, and yet it requires just the conditions carried out that Dr. Watt mentioned in his remarks upon that subject. I have administered it to all sorts and conditions of patients, from the child two and a half years old, to an adult eighty-five, and with this result, that when the patient was under my control and the control of themselves the effect was complete, and in nineteen cases in every twenty the change of countenance was no greater than you see when the same person lies down and falls to sleep in what we call a normal condition. The first step towards this result is to get the confidence of your patient, and to do this requires patience, and a knowledge of human nature. You should never use anything that will cause restraint, or that will cause or increase fear, and in all your movements do not seem in a hurry. I therefore use the common double-valved mouth-piece, and am very particular to show the patient how to inhale and exhale, taking pains to have the process demonstrated by the patient, so that I know there is no mistake about a full understanding of what I want done before turning on the gas.

Another point is to see to it that there is nothing pressing across the chest or stomach. In other words, whether the patient be male or female, see to it that the clothes are always loosened. This is very important, not so much on account of any difficulty in producing the anæsthetic condition, as that the patient may have the free use of the lungs just at the point of recovery.

As I have said before, there are two points to be observed. First, have complete control of your patient, second, have your gas pure, and I have no fear of administering it to any patient, sick or well. If a patient has heart disease, either organic or functional, I would much prefer giving the gas to extracting a tooth without, as I do not think there would be an hundredth part the danger of producing bad results.

I have exhibited it in a large number of cases for surgical operations with very happy results. In one instance for a protracted operation on the eyes for strabismus, and for a score of cases for minor surgical operations. As to administering it to women during pregnancy, I have in a great many cases, and am yet to learn of the first complaint of the slightest inconvenience following the operation. In fact, in such cases I consider it a perfect God-send for the relief of suffering humanity. In one case I administered it within two weeks of her confinement.

If a person have weak or tuberculated lungs, I would not undertake to produce anæsthesia with the gas at the first sitting, but would have it inhaled with a few "percussive" inhalations, and as often as every other

day for a week, so as to accustom the lungs to the mechanical effort, at each sitting giving a little more, and at the end of a week or ten days almost any one, with even tubercles in the lungs, can, with safety, take enough to produce the desired condition for extracting teeth or for ordinary surgical operations.

In cases where great fear takes possession of patients, I rarely ever attempt to produce anæsthesia at the first sitting, but content myself with getting them to take a few inhalations and then send them home to think the matter over. They invariably return with their fear gone. By pursuing this course you will almost always succeed, and I have never, to my knowledge, had a patient leave me. The gas cannot be used in plugging teeth, as its effects are not lasting enough, but in very severe cases of inflamed dentine, you may put the patient under the influence of gas, and with the engine remove the decay from the most sensitive tooth without the least trouble. As to local anæsthetics, I have never used those to any great extent. The best is an extract of the leaves of the eucalyptus tree. This tree is a native of India, and exhalation from its leaves is supposed to antidote the malaria which produce fever, and for that reason it has been largely cultivated in the Sandwich Islands, and more recently been planted in California and Florida. The extract referred to is balsamic in its nature, and not unpleasant to the taste, and in no sense an escharotic. The application of a drop upon a pledget of cotton to highly sensitive dentine, just before beginning to excavate, in many cases produces charming results. At all events it is worth trying, as I can see no way in which it can produce any bad results. There are others which I have used, some with and some without indifferent results, but will not take up your time to speak of them, as I consider them of but little account.

Dr. Keely : I want to say a word in regard to the subject of anæsthetics. I have been interested in this discussion. I have administered nitrous oxide, chloroform and ether. I want to talk to you about nature's anæsthetic, and when you can be taught to produce the anæsthetic effects upon patients by nature's means, I venture to say that you will at once take that in place of nitrous oxide, chloroform, and the other anæsthetics you have been talking about. They would all be thrown to the four winds of the earth, and you would never want to use them again. This great anæsthetic of nature is simply electricity; not this electricity which sends the news all over this broad land by telegraph, and under the ocean to the capitals of Europe. This great anæsthetic of which I speak is human electricity; the power that one mind has

over another; or you may call it animal magnetism, or mental electricity. Whenever you can produce this effect, you can perform any operation in surgery that you can under the influence of chloroform. I have extracted teeth often when the patient was as much awake as any of you this minute, without any pain being felt. For one lady in Kentucky I extracted nine teeth. She was magnetized, and it was simply impressed upon her mind that I could take these teeth out without pain, and I was enabled to do so. In the effort to extract a superior bicuspide I broke it off, then with the blade of a pocket knife I spent three-quarters of an hour in getting it out, and had simply to dig it out. I asked her frequently if she felt any pain. She answered, "No, sir, I feel more like going to sleep." I could mention many other cases as remarkable as this, but as it is late, and I only asked for two minutes, and some gentlemen are calling time, thus indicating they have no desire of being brought from darkness to light in regard to this subject, I am reluctantly compelled to close, leaving them in blissful ignorance.

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### AMALGAM FILLINGS.

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By C. H. LAND, D.D.S., Detroit, Michigan.

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For the past eight or ten years I have realized the difficulty of making what might be called a perfect amalgam filling. After investigating the matter pretty thoroughly, by trying numerous experiments, believe that I have at least made one step toward an improvement; accordingly present my ideas, with the hope that you may find sufficient interest in them to give them a place in the MISCELLANY.

In order to be as brief as possible, will present them in the shape of simple directions as follows: Prepare the cavity precisely the same as for a gold filling, then take sufficient amalgam for the size of the cavity, place it in a piece of chamois skin, add to it the usual amount of mercury, and immediately twist them together in the skin, and see that all the surplus mercury is forced out between the fibres, then, as quick as possible, place part of it in the cavity, alternately adding dry amalgam, that has had no mercury in it; so proceed until it is gradually built up to the desired shape, then with a light mallet and a broad-footed plugger, continue to force the dry filling until it will accept no more, then burnish.

In this way I have made some of the most beautiful contour fillings, the work being sufficiently hard to withstand ordinary mastication before the patient left the chair.

My reasons for not using a mortar and pestle are based on the following chemical facts :

1. The constant agitating of amalgam in a mortar, which would be in direct contact with the atmosphere, would, according to chemical laws, form a greater amount of oxide than if it were not mixed or handled.

2. Since the great desideratum is to use the least possible amount of mercury, therefore the time consumed in grinding with a pestle would so incorporate the mercury with the prepared metal, that the most desirable features for a perfect working would be lost.

3. While the process of amalgamation is going on, is just the time for the operator to proceed with his work, the dry filling being added to take up the excess of mercury which would naturally exist in greater abundance at this favorable moment, the original mass not yet being thoroughly amalgamated.

4. By following the above directions and keeping the prominent ideas in view, you will realize that it will be unnecessary to wash the filling with alcohol, etc., as very little, if any, oxide would exist.

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## TREATMENT OF TEETH DURING GESTATION AND LACTATION.

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Read before the Ohio State Dental Society, by I. WILLIAMS, D.D.S.

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I desire very briefly to discuss a few propositions that seem, to me, fundamental to the topic now under consideration.

It is believed by some, and indeed, so far as I know, the opinion obtains generally, that because, during the periods of gestation and lactation, a new osseous system is in process of formation, growth and development, deriving, as it does, every atom entering into the composition of its structure from the blood of the mother, therefore the quantum of bone-making material designed for the nutrition of the mother's bones and teeth is decreased by just so much as has been abstracted for the building up of the new osseous system, and as a consequence her bones, and especially her teeth, are during these periods very imperfectly nourished. Those who accept and teach this theory assume that the teeth, especially during gestation, are left in a starved condition, and almost necessarily fall an easy prey to the vitiated secretions found in the oral cavity.

If this hypothesis be true, we would naturally expect to find every other organ and tissue of the body suffering in a like ratio from like

causes. But generally we do not find pregnant women becoming emaciated and hollow-eyed, the muscles do not become attenuated and weak, the skin does not, for want of nutrition, disintegrate and fall off in patches, the hair and nails in growth and texture continue the same.

To demonstrate the truth of such a hypothesis, would prove either a great blunder on the part of the Creator of all things, or that the *genus homo* is not yet as thoroughly *evolved* as the other orders of animals. Run through the whole range of comparative physiology, and no such blundering, disjointed phenomena can be found. The lioness brings forth her whelps without loss or abrasion of tooth structure.

We have the best possible evidence that the Divine institutor of law made ample provision for the reproduction of species without necessarily impoverishing the blood of those set apart and consecrated to the reproductive office, and without in any way instituting pathological conditions.

When the female organization has so far developed as to be capable of the gestative function, natural and physiological processes immediately provide for an excess of bone-making material sufficient to commence and build up a new osseous system, a new muscular system, a new nervous system, etc.

If the life germ that is produced every month during the period of potential maternity be vitalized, then will this surplus be attracted by chemico-vital force to the vitalized germ, and by it be appropriated in the growth and development of a new organization. If this excess supply be not thus appropriated, another physiological process, called catamenia, is instituted, whereby this surplus is periodically expelled from the system, because it is not needed, having been provided for another contingency.

Proof is not wanting to show that in normal conditions the supply of bone-making material is sufficient to maintain the integrity of the bones and teeth of the mother, and at the same time build a new system. The Indian mother living in a state of nature does not suffer from disintegration of tooth structure. Thousands of women, even in civilized countries, and who have raised large families, have suffered no more from caries of the teeth than males usually suffer. You can all refer to instances where gestation has been commenced and completed with no more decay of the teeth than during the same length of time in the unimpregnated condition.

If, then, maternity be a physiological condition, in perfect harmony with nature and her laws; if it be, as it is, productive of health, vigor

and long life, whence arises the pathological conditions so often met with in civilized countries during the periods of gestation and lactation, especially as regards the teeth?

It is not because the growing foetus has exhausted the supply of the lime phosphates, for when the mother's teeth suffer from defective calcification, facts show that the child has also been poorly supplied with bone material.

The children born of mothers whose teeth have decayed rapidly during gestation, invariably have poor teeth.

Neither will we find satisfactory solution to the problem on the supposition that the grains, vegetables and meats ordinarily used as food are deficient in the lime phosphates, for, as has been shown, the very best results are often attained when only the ordinary diet, consisting of good bread made from wheat or rye, oat meal, the various fruits and vegetables, good beef, milk and butter, etc., have been used.

The primary causes, it seems to me, are the premature age at which gestation or child-bearing is commenced; systemic unfitness for the reproductive function from other causes, and mental infelicity.

The important functions of gestation cannot be sustained without great damage to every organ and tissue of the body, until there is a complete and perfect development of the physical powers, until full growth and maturity have been attained.

Every observing dentist knows that it is usually during the first period of gestation that those fearful ravages upon the teeth, so often seen, occur. Especially is this true of very young persons. It is not uncommon in this country for girls of sixteen to form matrimonial alliances, and at or before seventeen give birth to a child.

Is it strange that in such cases there should be a breaking down, not only of the teeth, but of every organ and function of the body? Until there is a perfect and harmonious development, and healthy condition of all the physical, mental and moral faculties, gestation should not be commenced.

That which, more frequently than any one thing, operates as a primary cause of general and special pathological conditions, and which generally gives efficiency to secondary causes, for want of a better name may be termed infelicitous mental states.

Judging from the numerous procured abortions, that form a part of the unwritten history of humanity, as well as from much positive information on the subject, we infer that child-bearing is not always, if indeed generally, a matter of choice, but is regarded, very often, as the

most distressing calamity that could have occurred. In many instances so great is the mental anguish, that death itself would have been chosen rather than pregnancy, and life and health are often voluntarily placed in jeopardy, in order to be freed from a condition so repugnant. Hope and joy flee away and leave the mind in a state of utter wretchedness. With the mind, the grand propeller of all the physical functions, in such a condition, not a single vital function is, nor can be, well performed. I care not how rich the food may be in the lime salts, and how much of the bone-making material may have been superadded, with the nervous and mental stimuli thus withheld, there can be no healthy and complete appropriation of them.

However good the former hygienic regimen may have been, it is suddenly abandoned. However much the teeth may have been valued and cared for, they now receive little or no attention, and their value dwindles into insignificance.

The case is far different with her whose physical and mental powers have attained their full and harmonious development, and in whose breast maternal feelings and desires have been quickened into vigorous life. With the intelligent woman thus previously prepared in body, will and affections, and with whom gestation is no accident, and is not regarded as a calamity, digestion, assimilation, oxidation and appropriation will be well performed.

There will be no abandoning of the former excellent hygienic regimen; on the contrary, a more careful looking to all its minutiae. There is no breaking down of will power, no gloomy foreboding of death and the grave, but a determination to live and give life.

It is scarcely necessary to say that the teeth of such a person will pass the ordeal of gestation and lactation with no more injury than during an equal period of time in the non-gestative state.

Notwithstanding gestation is a healthy physiological process, it is a very different condition from the unimpregnated state. There is usually exquisite nervous and mental susceptibility, requiring much knowledge, prudence, skill and delicacy on the part of the physician and dentist. What they do, or neglect to do, may greatly affect both mother and child.

What would be eminently proper and advisable in one condition, might be very improper and injurious in the other.

It may, I think, be laid down as a rule, that operations requiring much time, severe or unpleasant mental impressions, or that may occa-

sion unpleasant associations, should, if possible, be postponed till some considerable time after parturition.

The treatment, so far as the filling of teeth is concerned, should be temporary. No attempt at great thoroughness should be made. Cavities that are superficial should not be disturbed, and those in which decay has so far progressed as to render it probable that exposure of the pulp may take place soon, or in which thermal changes affect the nerve, should be filled with gutta-percha, or oxy-chloride of zinc, and no more excavation should be made than is absolutely necessary.

The capping of the pulps of teeth during gestation, owing to extremely nervous susceptibility, is not as likely to be successful as at other times, but in very important teeth it is always proper to attempt it, rather than resort to devitalization.

I would never extract a tooth during gestation that can be rendered tolerably comfortable by palliative treatment, and in most cases this can be done.

Were it necessary, many cases might be cited to show the impropriety of surgical operations during pregnancy, not imperatively required. Abortions and malformations, as well as mental impressions and influences, lasting during the life of mother and child, are among the sequences.

The agents necessary to be used in correcting abnormal conditions of the fluids of the mouth can only be determined by testing those fluids. If they are found to be acid, alkaline washes may be prescribed; if found to be alkaline, acidulated washes and acid fruits are indicated.

Too much importance cannot be attached to the regular, frequent and thorough cleansing of the mouth and teeth.

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## NOTES.

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### Correction.

On page 235 of MISCELLANY, in the description of Mr. Fletcher's experiments with water motors, instead of bore of jet of nozzle one-sixteenth inch, read *three-sixteenths*.

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THE DENTAL ENGINE may be used as a vaccinator. A physician of this city is

said to have so employed it; having provided himself with an engine for surgical purposes, the use spoken of above occurred to him, and it has been found to be practically instantaneous in its operation. It is likely to be especially serviceable where large numbers of vaccinations are to be performed.—*Proceedings Med. Soc. Co. of Kings, N. Y.*

### New Remedy for Burns and Scalds.

Dr. G. F. Waters, of Boston, recently tested, before the meeting of the Massachusetts Dental Society, a new remedy for burns and scalds, consisting of the application of bicarbonate of soda, the simple cooking soda used in all families. The doctor dipped a sponge into boiling hot water and squeezed it over his right wrist, the water flowing almost completely around the arm, and nearly encircling it with a severe scald two inches in width. Not content with this, he dipped the sponge a second time, and pressed it closely on the under side of his wrist for thirty seconds. He then applied bicarbonate of soda to the scalded surface, and laid over it a wet cloth, and the intense pain was banished as if by magic. On the next day after this severe test, the scald, with the exception of the part purposely made most severe, was practically healed, only a slight discoloration of the skin showing where the scalding water had flowed—this, too, without a second application of the soda. The flesh on the under side of the wrist had been cooked down to the sweat-glands, and the scald was one which ordinarily would have caused an open and painful wound of long duration. The only treatment of this, however, after the first application of the soda, was to keep the part moist with a wet cloth, and no pain was experienced, and it was but a few days before this severe wound was seen to be rapidly healing.

### Experiments in Gas Suffocation.

An interesting experiment has been tried with the stove in the room in which Mr. Shattuck, of Providence, R. I., was suffocated recently by coal gas. The stove is a retort gas stove. Three pigeons were used in the trial, which began one hour after the gas had been lighted in the stove. The thermometer registered sixty degrees. One of the birds was placed in an open

cage suspended from the ceiling so, as to hang at about the height of an ordinary man's face, and the others were disposed, one on the bed that had been occupied by Mr. Shattuck, and its mate on the floor. Eight minutes after being incarcerated, the pigeon in the cage at the ceiling retired to the corner of its cage and made but slight movements. When thirty minutes had elapsed this bird was dead, while the birds on the bed and on the floor evinced some uneasiness. At the expiration of forty minutes the bird on the bed became motionless. The bird on the floor lived five hours. It was then placed in the cage, and expired in half-an-hour.—*Boston Herald*.

### How They Pull Children's Teeth in Paris.

In the Children's Hospital in Paris, the nurse goes round at eight A. M., and gives to each child under sentence from thirty to fifty grains chloral-hydrate. The dentist follows in one hour, and the child wakes up an hour or two afterwards and wonders what has become of its tooth.

[*Pacific Medical and Surgical Journal*.]

### The Anæsthetic Effects of Cold Water.

Several writers have claimed to have witnessed remarkable anæsthetic effects from hypodermic injections of pure cold water. Among these, the inventor of the aspirator, Dr. Dieulafoy, has, for several years past, been in the habit, in acute articular rheumatism, of injecting some ten drops of cold water around different parts of the affected joint, as a means of relieving the pain. The results are most remarkable. The pains abate, and the patient is enabled to move the joint; and in some cases the rheumatism is even cured by this simple means. The same means may be employed also in muscular rheumatism, ischias, etc. A repetition of these experiments does not always bring the same satisfactory results.—*Med. and Surg. Reporter*.

JOHNSTONS'

# Dental Miscellany.

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SHOULD FIVE YEARS' PRACTICE IN DENTISTRY, INCLUSIVE OF PUPILAGE, CONTINUE TO BE REGARDED AS EQUIVALENT TO ONE COURSE OF LECTURES IN DENTAL COLLEGES?

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By JOHN H. MCQUILLEN, M.D., D.D.S., Professor of Physiology in Philadelphia Dental College.

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Read before the Pennsylvania State Dental Society, at the Ninth Annual Meeting, held July, 1877.

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The Chairman of the Executive Committee wrote to me two months ago to prepare an essay for this meeting of the Society. I responded that it would not be convenient for me to do so. In looking, however, over the order of exercises, which has just come to hand (a few days before the meeting), I observe that in the list of essays to be presented "Dental Education" is not named. Under these circumstances, with no intention of inflicting upon the members a lengthy and elaborate essay on that important theme, I have thought there might be some propriety in submitting a few suggestions, hastily written, under the query that heads this communication. Brief as the article is, if it should provoke discussion, awaken the minds of the profession to the impropriety of continuing to regard "five years' practice in dentistry, inclusive of pupilage, as equivalent to one course of lectures," and lead to its abandonment on the part of the dental colleges, my object will have been attained.

In the organization of the National, State and local dental societies,

dental education was one of the primary and important objects in view. Recognized, indeed, as the corner-stone of the foundation, on which an enduring superstructure could be erected, that would command the respect of those engaged in the liberal professions, the founders of these societies advocated the thorough education of those proposing to enter upon the study of dentistry. How that could be best accomplished, whether in departments connected with medical colleges, or in dental colleges, was then, and still continues to be, a prolific theme of discussion. With no intention of entering upon the consideration of these differences of opinion, it is an undeniable fact that the dental colleges have been the active agents in effecting the wonderful changes that have taken place in the profession, and in the estimate of its practitioners by the community within the past fifty years. From what was formerly in the hands of a few men—little more than a mere mechanical occupation—it has been elevated to the rank of a liberal profession; and the dentist, in place of being regarded as an object of fear and dread, whose delight it was to wrench from the jaw an aching tooth in the most unfeeling manner, is now looked upon with respect and gratitude as an educated gentleman, whose mission is to relieve suffering humanity of the most painful of all afflictions, arrest the progress and restore the ravages made by decay in the natural organs; and when these conservative efforts prove unavailing, by the introduction of properly-constructed artificial substitutes to give to the features their natural expression.

It may be said, and truly, that a large proportion of the profession have never been inside of dental colleges, and that the dental societies and magazines have been the most powerful levers in accomplishing this great work. With no disposition to undervalue these agencies—on the contrary, recognizing to the fullest extent the power of the press, and the stimulating and beneficial influence of associated effort—a careful examination will reveal the fact that the organization of the National, State and local societies, in nearly every instance, has been the work of the faculties and graduates of dental colleges, and that the editors of, and most frequent contributors to the dental journals, have been Professors in the dental colleges, who have thereby reached a larger circle of students than could have come within the sound of their voices, and thus have made their influence felt, not only in every section of this country, but in addition, in every quarter of the globe where dentistry is practiced.

Several years ago I directed attention to the fact that, “a little more than a quarter of a century ago (thirty-eight years), a successful effort

was made to establish a college for the express purpose of teaching the science and art of dentistry, in a manner calculated to elevate it to the rank of a liberal profession. As year after year rolled by, efforts were made, with varying success, to found institutions of similar character in different sections of the country. Some of these, after an ephemeral and inglorious career, ceased to exist; but the greater number have increased in strength and usefulness. Institutions of learning, as a rule, like individuals and nations, are compelled to enter upon their career with limited means, and whatever may be the aspirations and desires of their founders—with the fullest possible recognition of all that is demanded for the successful accomplishment of the aims and objects in view—stern necessity compels them to accommodate themselves to circumstances and make the most of their surroundings, with the determination, as time and increase of resources afford the means and power, to do that which it was impossible to effect in the commencement of the undertaking. As the seed laid in the ground, under favoring influences, germinates and produces a thousand fold, so with increase of years, strength and resources, evidences of growth should be manifested in collegiate institutions, by enlarging the curriculum of instruction, increasing the means of illustration, and in every direction affording the fullest opportunity possible for the impartation and acquisition of knowledge.

“The trials and difficulties with which the faculty of each institution has had to contend in gaining the confidence and support of the profession, cannot be appreciated by those who have not participated in the struggle from the beginning; nor can they conceive the more than missionary zeal that is demanded in delivering regular and systematic courses of lectures to classes so small that the prospect of ultimate success appears impossible to any other than enthusiasts. A distinguished writer has said, ‘It is pleasing to contemplate a manufacture rising gradually from its first mean state by the successive labor of innumerable minds; to consider the first hollow trunk of an oak, in which, perhaps, the shepherd could scarce venture to cross a brook, swelled with a shower, enlarged at last into a ship of war, attacking fortresses, terrifying nations, setting storms and billows at defiance, and visiting the remotest parts of the globe. And it might contribute to dispose us to a kinder regard for the labors of one another, if we were to consider from what unpromising beginnings the most useful productions of art have probably arisen. Who, when he saw the first sands or ashes, by a casual intensity of heat, melted into a metalline form, rugged with excrescences and clouded

with impurities, would have imagined that in this shapeless lump lay concealed so many conveniences of life as would in time constitute a great part of the happiness of the world? Yet by some such fortuitous liquefaction was mankind taught to procure a body at once in a high degree solid and transparent, which might admit the light of the sun and exclude the violence of the wind; which might extend the sight of the philosopher to new ranges of existence, and charm him at one time with the unbounded extent of the material creation, and at another with the endless subordination of animal life, and what is yet of more importance, to supply the decays of nature and succor old age with subsidiary sight. Thus was the first artificer in glass employed, though, without his own knowledge and expectation, he was facilitating and prolonging the enjoyment of light, enlarging the avenues of science, and conferring the highest and most lasting pleasures; he was enabling the student to contemplate nature, and the beauty to behold herself.'

"The origin and establishment of dental colleges have been so recent, that ample opportunities have been afforded, not only to the profession, but the public at large, to observe their gradual development by the successive labors of a few active, energetic and indefatigable minds; and whatever may have been the doubts in the past, the question of the success of the movement is no longer an uncertain one."

These efforts have been subjected to constant criticism on the part of the profession, particularly at the meetings of the Associations. Some of these criticisms have been just, while others have been not only unjust, but ungenerous, and even willful perversion of facts. It is not my intention to dwell on all the points that might be considered, but to direct attention to the fact that leading members of the profession have over and again urged, that, the dental colleges should require of all students of dentistry attendance upon at least two full winter courses of lectures. And I would now ask the representatives of the profession in this and other STATE DENTAL SOCIETIES, and in the AMERICAN DENTAL ASSOCIATION, whether you are in earnest in this matter, and are willing to prove it by acts as well as words? You have the power. It is but for you to suggest, and the dental colleges would promptly act. Your request would be regarded in the light of a command.

When dental colleges were first established, the custom of regarding "five years' practice in dentistry, inclusive of pupilage, as equivalent to one course of lectures" was inaugurated, and found its justification in the fact that there were those who had been engaged in practice years before the foundation of such institutions, whose knowledge and skill was quite

equal, if not superior, in some instances, to those of the professors, and therefore warranted the exception in their favor. Year after year this exception has been continued, and many excellent men, *of studious habits*, who have graduated under this clause, are an honor to the profession. There are still some estimable practitioners entitled to its provisions who have failed to take advantage of it, and in whose cases exceptions might be made in favor of fifteen or twenty years' reputable practice. But to continue to hold out the inducement that "five years' practice in dentistry, inclusive of pupilage, will be regarded as equivalent to one course of lectures," can be defended on no other ground than that of expediency, in securing a certain class of students, while at the same time, it is a standing advertisement in the college announcements, encouraging and indeed, offering a premium to young men to enter the offices of practitioners, who are willing to take them, with the understanding that after remaining a few months, and in many instances but a few weeks, they can engage in practice on their own account, and with such inadequate preparation, after doing all the injury they can to the community and the profession, subsequently taking advantage of the "five years' " clause in the college announcement, graduate in one winter course of lectures. If this clause was rescinded by all the colleges, these men would be forced to attend at least two full winter courses of lectures, and thus undergo a training that would fit them to engage in practice with some credit to themselves and benefit to the community in which they may settle. As I have elsewhere asked, "What are the practitioners of dentistry doing individually with regard to the education of the profession? Is it not true that a man can enter the majority of dental offices, and after a short period—a few weeks or months at best, during which he has had few, if any, opportunities beyond those afforded in the laboratory of learning anything about dentistry—engage at once in practice, with a certificate from his preceptor endorsing his competency? Are those who so freely criticise dental colleges doing their part as private preceptors? Do they inquire into the mental, moral and physical qualities of those whom they receive as private students; supply them with the latest and best text-books; direct their course of reading, and subject them to stated examinations, to ascertain what progress they have made, and to correct erroneous impressions which they may have formed? A few members of the profession do this, but they are exceedingly limited in number, and the yearly additions to the profession are mainly through private preceptors, who fail to do their duty by those who come under them as students; only a small proportion of the latter attend college and

graduate. The alumni of the dental colleges have done much toward the advancement of the profession during the past few years, and they embrace among their number some of the most cultivated minds and skillful practitioners in our ranks. For years I have advocated the enactment of State laws which would make it obligatory upon students of dentistry that they should undergo two years of private preceptorship, attend two full courses of lectures, and graduate from a respectable dental college, before entering upon practice.

As one illustration out of many which might be cited of the manner in which private preceptors, so-called, at home and abroad, fail to discharge their duty to students, permit me to cite the following case. This spring a gentleman wrote to me in relation to a young man who had been engaged in dentistry for five years—four years in Europe, and one in America—and desired to graduate at the Philadelphia Dental College by attending one course of lectures. To this I replied, as in a number of similar applications, that unless the young man had attended a winter course of lectures in some other dental or medical college, it would be necessary for him to attend two full winter courses of lectures to entitle him to present himself as a candidate for graduation, as the faculty had rescinded the clause that “five years’ practice in dentistry, inclusive of pupilage, will be regarded as equivalent to one course of lectures.” In reply to this, a letter was received stating that this young man would start for Philadelphia immediately. He arrived in a few days and presented the following letter:

“DEAR SIR: I have the honor to introduce to you hereby, Mr. ———, who is to enter your college, and whom I take the liberty of recommending to your special care.”

In the interview with the young man, he gave me to understand that it was absolutely necessary for him to graduate at the expiration of the next winter course, as he had to return to his native country at that time to perform military duty. On asking what he had done during the past five years, he said his time had been passed in the laboratories of various dentists in Germany whom he named, and with one in this country who had given him some opportunities to operate. He had never studied anatomy, physiology or chemistry. Putting a few leading questions to him, which a young school-boy would have answered, and he could not, I then endeavored to impress upon his mind the importance and extent of these studies; how essential a knowledge of them was to his success as a practitioner; how utterly hopeless would be the task of undertaking

to master a knowledge of them in the brief time he had named; and if he were ever so skillful as an operator and as a mechanical dentist—a fact yet to be proven by actual demonstration—I did not see how any college could regard *his* five years in dentistry as equivalent to one course of lectures, as it would be a very free interpretation of the clause to accept him as coming within its provisions, as he had never been a *student* or in actual practice on his own account, and merely occupied the position of a workman for others. Five years' work at the jewelers' bench, in a machine shop, or with the jack-plane of the carpenter, might with equal propriety be regarded as an equivalent. That over and again, in former years, I had declined to receive persons like himself as coming within the clause, and had induced them to attend two full winter courses of lectures; and that we could not receive him as eligible to graduate on one course, as we required attendance upon two full winter courses, which he was advised to take advantage of. He replied that he could not do so, and would have to go where he could make such arrangements as he had named. The young man spoke very good English. I name this, as it might be inferred that his inability to answer the questions was due to a want of familiarity with our language. The questions were plain and simple ones, with the view of ascertaining whether he had any knowledge of the subjects named. Some idea of their nature may be gained by one of them, viz., How many cavities are there in the human heart? Answer: Two. The young man was by no means deficient in intelligence. On the contrary, he impressed me that by taking sufficient time to properly study the sciences named, he would have no difficulty in mastering them. The interview was a pleasant and friendly one throughout, and the young gentleman subsequently called and thanked me for the courtesy and attention which he had received.

At a period when many young men who have enjoyed every advantage in education not only attend two full winter courses of lectures, but in addition take two spring and fall courses, and work daily in the dispensary and laboratory of the Dental College for two years, with the view of properly fitting themselves for the practice of dentistry, it is an act of injustice to them, and one which they may very properly complain of, when discrimination is made in favor of men who have had none of their advantages and yet are permitted to graduate on one term.

In conclusion, every one must admit that the interests of the profession, the community, the colleges, and last, though not least, the students, alike demand the rescinding of the clause that "certified evidence of having had five years' practice in dentistry, inclusive of pupilage, will be

regarded as equivalent to one course of lectures," and that in place thereof attendance on two full winter courses of lectures should be required of candidates for graduation by every respectable Dental College.

That the motives in writing this communication may be misrepresented by interested parties, is naturally to be expected; but the principles on which it is based, cannot be controverted, or overturned.

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### "GOLD A TEMPORARY STOPPING," IF MADE SUCH.

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Reply to C. M. WRIGHT, D.D.S., Basel, Switzerland. By MARSHALL H. WEBB, Lancaster, Pa.

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Dr. C. M. Wright, in an article entitled "Gold a Temporary Stopping," published in the DENTAL MISCELLANY for July, 1877, concludes that, "Perhaps we may learn that gold is a material used as a *temporary filling* by dentists, except in teeth of excellent quality and in favorable positions, when it *may be* considered permanent."

Gold, as a filling material, is, almost always, just what operators make it. If one possesses the requisite ability, operations can be performed with gold, which, in the vast majority of cases, will be permanent.

The mere insertion of a material should not, and does not, constitute an operation for the preservation of tooth structure; the manner of the performance of the operation and the mode of preparation, introduction and building of the gold, is that which ought to be more particularly noticed.

We cannot positively say that one is a first-class operator unless we see a number of his operations, and even then the real value of the estimate which is made of such operations depends very much upon the correctness and efficiency of the judgment of him who makes the examination. He should be a first-class operator and an earnest seeker after truth, regardless of personality, and base his judgment upon the character of the operations.

Dr. Wright refers to his predecessors, and states: "Here is a bicuspid, for instance, upon which Nos. 1, 2 and 3 have operated, and which No. 4 has extracted." He further states that, "These were not common operators, but first-class, conscientious and capable dentists." It is important to know upon what particular points Dr. Wright bases his judgment in reference to his predecessors being what would now be

considered first-class operators, and if "No. 4" was such an operator, why he extracted the bicuspid which the other three operators had filled.

Dr. Wright not only makes complimentary statements in reference to his predecessors, but also to a gentleman of Cincinnati. This he should do just to the extent that they severally deserve; but when after truth in its relation to principles of practice, it is necessary to delve into and endeavor to ascertain the causes of failure, and to base and express our judgment entirely upon the character of operations. A practitioner may be "an accomplished and cultivated," and yet not really a first-class operator.

I entertain for the gentleman to whom reference has been made a high regard and the kindest feelings; yet in this connection I must frankly say that I do not wonder that filling "*in a vast number of cases does not meet the requirement*" through his methods of operating, as well as with those who use gold as he does, although there are comparatively few who use it better. In a letter lately received from him, he states: "I have no *one* method of filling gold at the 'cervical wall.' I start with a retaining pit, using cohesive gold in some cases. In other cases would regard this as a waste of time, and use semi-cohesive or soft foil in large masses, malleting well down. The shape and position of the cavity would control my choice in the matter."

No one can insert gold in "large masses," and, at the same time, be certain that a part, or the whole, of the mass of gold thus impacted has not moved (though, perhaps, not perceptibly) during such impactment. Instead of thus saving time by such method, therefore, such fillings "have to be done over in a *majority of cases*." "A great number of approximal fillings must be done over many times," unless each cavity is so shaped—so *made*—as that the operator can get at it in such a manner as to enable him to pack gold according to an exact principle.

Previous to about four years ago I operated in a manner somewhat similar to this gentleman's methods, and was obliged to re-perform many operations upon proximate surfaces. My "*experience*," therefore, was very much the same as his and others'. I endeavored to observe and study the cases closely, and have, since the time mentioned, performed operations according to what I have found to be definite principles.\*

I now meet with but very few failures, and those I do occasionally have are due almost, if not entirely, to some imperfection in the operation, which had occurred and been unnoticed at the time the operation

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\* Quite fully set forth in an article upon "Operative Dentistry," published in the *Dental Cosmos* for February, 1876.

was performed. I must say, however, that I never performed an operation that I did not see some point or points where I could do better had I to perform the same again. No one can ever reach absolute perfection.

In the vast majority of instances, failures are due to imperfect operations—"to imperfect contact of the gold against dentine," says Dr. S. B. Palmer; and he further agrees with your writer, that "where there is no moisture, there is no action." By far the greater number of practitioners do not perform thorough operations; hence, very many of their fillings fail; not, however, because the material with which they attempted to fill was gold, but for the reason that they did not understand what they were about, and failed to prepare the cavity and insert and finish the gold properly.

"Pellets," "cylinders," and similar forms of gold, may *do* for the stopping up of cavities which are treated as simple *holes*, and where dental tissue is cut away so as to conform to such filling, but it is not best to have the gold in such forms cohesive, for the reason that the difficulty of properly manipulating it is thereby only increased; gold in such forms is not so easily impacted as when it is not in a cohesive condition.

For all first-class operations, cohesive gold-foil should be used, and be so prepared (folded and then cut into small pieces), introduced and impacted (by aid of the mallet) that it shall be firmly anchored from the first piece inserted to the last impacted, and so that the filling shall be uniform in density, the gold well packed against the dentine and enamel, and over attenuated edges, so as to protect them, and the whole of that portion of the organ which has been destroyed properly built out, and finely formed and finished, so that it may be in conformity with the design given us by Nature.

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### ESSAY—"MECHANICAL DENTISTRY."

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Read at Greenfield, Mass., before the Connecticut Valley Dental Society, by DR. C. C. HASKELL.

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MR. PRESIDENT AND GENTLEMEN OF THE CONN. VALLEY DENTAL SOCIETY:

The task imposed upon me is one I regret was not given to more capable minds.

I have been sorry that an invitation was extended to me to write an essay on any dental subject; and I really think, Mr. President, if the

Executive Committee had known of my inability, and how *dead sure* I was to accept, they would have hesitated before sending the invitation.

But what I may say upon the subject of Mechanical Dentistry will be neither new, interesting or entertaining, and, perhaps, only of value to myself.

To be successful in mechanical dentistry, we must begin right and keep right, in order to come out right. It is said that there are five hundred causes for the stoppage of a watch. If this be true, how many causes are there that would defeat a good practical result in forming a set of teeth! From the taking of the impression, through all the different stages of the work, to the final completion of a denture, various accidents may occur, either of which may prove fatal to perfect success.

The greatest practical utility should be the great point aimed at, in the construction of artificial dentures. There are no parts of the mechanical work but what we are all familiar with. We have all been over and over again the same routine of making a set of teeth so many times, that we consider it only as one of our routine duties, the same as going to our meals at the usual hours. Yet how many perplexing things there are that come up in the process of constructing almost every set of teeth, that bother and try our patients.

However well we may know the general principles and processes, it is the little things, the minutiae of the affair, that we wish to talk over and learn more about.

We may theorize about the advantages of artificial dentures as much as we please; it will by no means give us that knowledge that we wish to possess, that will make our work more satisfactory and successful.

Our first anxiety, when called upon to undertake the responsibility of the construction of an artificial denture, is to be sure we have a proper kind and quality of plaster for the impression.

The difficulty of procuring plaster that, under all circumstances, is what is desired, and, indeed, indispensable to success, has been experienced by all. We are satisfied that the finer the plaster is ground—other things being equal—the better for impressions and models.

On examination of the mouth, if we find the ridge is quite hard and no soft parts, we take an impression of plaster alone if we have a suitable-shaped cup; if we have not quite the shape we desire, we build up with wax, or cut away or bend the cup until it is approximately the shape of the jaw. If we find part of the ridge is absorbed and the process gone, leaving the parts soft and flabby, we take an impression with wax or modeling compound first, then, after, with as little plaster as possible. I know it is the universal practice of some of our best dentists to *always*

take first an impression in wax, gutta-percha or other compound, and then after with plaster. But I consider this practice unnecessary in cases, and, indeed, I class these cases among those which Dr. Adams styles instances of the cruelty of dentists. The patient shrinks from this wholesale stuffing of the mouth, and some have a perfect horror of having an impression taken. The more we can do away with these offensive operations, and still arrive at equally good results, the better.

The impression taken, the selection of the teeth I believe to be the next important point. If, by mistake, we select teeth that are in form, size, color or expression defective, our productions, however satisfactory to our patients, are nevertheless failures, and must bring a blush upon the cheek of the true artist, whose perception of harmony detects the frightful incongruities.

A dentist who constructs artificial dentures as they should be, must possess both artistic conceptions and the artisan's skill to execute, in order to meet the exigencies involved in his operations. In one instance he has to insert short teeth, in another long. The lighter and darker shades, the peculiar tint and tone of the teeth and gums, size, form, position and expression of these organs, together with their perfect adaptation and harmony with the other features of the person for whom they are intended, require the finest powers of discrimination and manly execution, in order to conceal the art employed in forming them.

No set of rules can be given for the selection, arrangement and adaptation of artificial teeth that will apply to every case. Close observation, a careful study of nature—particularly of the temperaments—and a well-applied experience, can only make one proficient in this interesting department of our profession. But when a patient applies for an artificial denture, a mere wreck of the original is presented. Not a tooth is left to tell the tale, whether beauty in all its symmetry and grace once had its abiding place within, or irregularity and distortion rioted in unseemly disorder there. The nose and chin seem conscious of the horrid chasm between them, from whence inarticulate and unearthly sounds do come, in mortifying contrast with the sweet, melodious and distinct articulation so peculiar to its original self, and are endeavoring to close the gap by coming together, like old friends under mutual affliction.

To restore this wreck of departed beauty to its original freshness, to obliterate all evidence of age, disease or neglect, is the true and noble mission of the dentist.

If we have the teeth selected, we next find our work purely mechanical until we have them completed. The various kinds of material in use are used to some extent by all.

The base most general is rubber, and the one that meets with the most satisfaction among the masses.

The various devices for retaining the plate in position, and the various patented "sells" that we have been more or less *bitten* by, I do not propose to discuss in this essay. But, for myself, I believe a well-fitting plate, without any chamber-ridge, soft lining, flexible edge or rubber disk to make the mouth sore, is best, in most cases, for general use.

When we have the teeth done and ready to insert in the mouth, then comes "*the tug of war.*"

Imagine, if you can, a patient, perhaps of doubtful age, waiting for you to finish a task you cannot leave. Perhaps she has worn her plate a week or so, and has returned just to make you a call, and tell you what she knows about dentistry and the construction of artificial teeth. Such patients do not usually wait for you to attend to them, but demand your attention at once.

It matters not how much your time may be taken up or how many are waiting. She presses her attention upon you, and you are obliged to listen to the dulcet strains of this *nasal-twanged* maiden, who has come to inform you that she, together with her neighbors and relatives, and a majority of the sewing society connected with the parish, have arrived at the conclusion that you have made a great mistake in her teeth, and that an alteration is highly necessary. Or to some gruff old man that expects you to outdo his Maker, and is ready to pronounce you a humbug and demolish the whole dental profession, because he cannot bite a tenpenny nail in two at his pleasure. Or to some lady who has compared her teeth with those of her neighbor, and does not, or will not, see why her teeth are not like them. They set well, and why have not hers been made in the same shape?

This is but a faint outline of the perplexities of the mechanical dentist which he meets in his daily practice, and must meet with calmness and submission.

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SEMI-ANNUAL MEETING OF THE CONNECTICUT VALLEY  
DENTAL SOCIETY FOR 1877, AT GREENFIELD, MASS.

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Reported by Dr. C. T. STOCKWELL, Secretary.

The Society was called to order at 10½ A. M.; Vice-President Noble in the chair.

Report of the Secretary read and approved.

Drs. Beals, Miller and Derby were appointed a Committee on Membership.

Drs. J. S. Hurlbut, N. Morgan, O. R. Post, F. Searle and L. D. Shepard were appointed a Committee on Resolutions, relative to the deaths of the late Drs. J. J. Anderson and E. Huntington.

The Special Committee on "Violations of the Code of Ethics" reported, recommending that no further action be taken in the premises, which report was adopted.

Dr. F. Searle was elected to fill the vacancy in the Executive Committee occasioned by the death of Dr. J. J. Anderson.

The Committee on Membership reported favorably on the following applications, all of which were duly elected, to-wit: Dr. C. L. Anderson, Springfield, Mass.; Dr. Edward S. Niles, Northampton, Mass.; Dr. F. E. Pcmroy, West Townshend, Vt.; Dr. Wm. H. Law, Hazardville, Conn.; Dr. G. S. H. Comins, West Lebanon, N. H.; Dr. J. C. Perry, Shelburne Falls, Mass.; Dr. William Lester, M.D., South Hadley, Mass.; Dr. A. F. Davenport, North Adams, Mass.; Dr. J. B. Davenport, North Adams, Mass.

Voted, that the request of Dr. C. D. Newell, that he be granted an honorable discharge from the Society, be granted.

By vote of the Society, Dr. Searle stated his method of treating alveolar abscesses.

President Adams appears and takes the chair.

Voted, that the Secretary be empowered to furnish such members as may wish to attend the meeting of the American Dental Society, at Chicago, with the proper credentials.

Letter from Dr. Geo. A. Mills, of Baltimore, Md., presented and read by the Secretary.

After the noon recess, the first topic on the programme, "Mechanical Dentistry," was taken up, and an essay read by Dr. C. C. Haskell, of Greenfield, Mass.

Dr. L. Noble would like to inquire how the members present are in the habit of working celluloid—by dry heat or steam?

Dr. D. H. Smith uses the old style steam heater, but puts almost no water in the receiver—perhaps a tablespoonful—keeping up a continued pressure from about 250 degrees of heat. Has no trouble with plates by warping. Makes them thin.

Dr. L. Noble has used steam, but not with very satisfactory results. The plates frequently assume a dull, smoky appearance after being worn awhile.

Has re-arranged his steam apparatus, by removing the packing-box, so as to admit of an easier manipulation of the screw, and also the

safety-valve, which allows him to introduce a thermometer into the receiver, carrying the bulb of the thermometer just below the inner surface of the cover, or upper portion of the apparatus. Works it dry. Takes plenty of time—an hour or so. The plate should be thoroughly heated, not only on the surface, but all through. In this manner he obtains better results than formerly by steam.

Dr. P. H. Derby wants to thank Dr. Haskell for his paper (published elsewhere in this number of the MISCELLANY). It contains many hints of special value to the young practitioner. He will do well to note what he has to say in regard to taking impressions. Before taking them, we should examine the mouth carefully for hard and soft places. This is likely to be overlooked by the younger members.

Finds that patients in almost all cases dread to have an impression taken, and not always without cause. Knows of one case where the patient had nearly all the skin taken from the roof of the mouth by the removal of an impression. The plaster was probably mixed too dry. Thinks that the plaster should be mixed and placed in the mouth in a soft, creamy state, and that care should be taken not to choke the patient.

Dr. L. Noble always instructs his patients to bring the head well forward, so as not to allow any surplus plaster to drop or run into the throat, and in this way avoids any choking.

Dr. C. S. Hurlbut also wishes to thank Dr. H. for his paper. He often finds it necessary, in taking an impression, to take a little plaster on the point of the spatula and press it up into the roof of the mouth. In this way avoids air bubbles. Don't put too much plaster into the cup. He objects to the idea, suggested by the paper, that rubber is to be considered as, generally, the best material to be used as a base for artificial teeth. Thinks we have a better material than either rubber or celluloid in gold. It has been used longer, and has stood the test better than anything else. Dentists put much more work, skill and thought into *filling* teeth than they did twenty years ago, and why not do the same in regard to furnishing artificial teeth? We have made rapid advancement in other branches of the profession, but in this we have not advanced. He does not think rubber is the best material. It does not produce the best results. It does produce injurious effects upon the mouth. It causes constant absorption;—plates become loose and fall down in the mouth,—it irritates the membranes, and we often find the roof of the mouth looking like a piece of raw beef. Is this the best we can do?

Dr. N. Morgan: In *filling* teeth, gold, amalgam, tin, etc., are each good in their place; so with the various materials for plates. All these—gold, rubber, celluloid, etc.—have each their place, and should be so used. Every dentist should have the ability to use them all, as each individual case may require.

Dr. D. Murlless thinks that no vegetable base is a fit one for artificial teeth.

Dr. J. N. Dodge inquires as to the matter of expense, and as to what shall be done with the very large number of cases that cannot afford a gold plate?

Dr. C. S. Hurlbut thinks that the gold plate is the cheapest in the end.

Dr. F. Searle makes a good deal of gold work, but finds it objectionable, inasmuch as usually made it affords many places for the lodgment of food, and therefore becomes uncleanly. Consequently, he vulcanizes a strip of rubber about the stays. Sometimes uses plates with clasps in partial sets. Thinks there is no kind of work but that has its objections and advantages. We must use our own judgment in each case, and select such material as is indicated by all the combined circumstances of the case in hand.

The greatest objection to rubber is that it so often causes that peculiar "beef-steak" appearance, or inflamed condition of the mouth, spoken of; but the same effect is produced, to some extent, at least, by the use of gold plates, especially in cases where large air-chambers are used. Believes that it is caused, in part, at least, by the too continued wearing of the plate, day and night. In regard to celluloid, he does not know where it is used that rubber may not be. Does not think it possesses any advantages over rubber. Has heard many who advocate other materials than rubber say that if it were not for the "patents" they should use it themselves.

Dr. L. Noble thinks that celluloid has advantages not possessed by rubber. As in cases where it is necessary to use long teeth, and also where the patient has prominent gums.

Dr. D. H. Smith thinks that celluloid is especially preferable in temporary sets.

Dr. J. Beals has used the "flexible disk" considerably, and with satisfactory results.

Dr. O. R. Post explains to his patients fully the process of taking an impression in advance, with directions as to position, etc.

He prefers rubber to celluloid, and in many cases to gold. Has not, however, used celluloid very extensively. Has some fifteen or twenty

sets in use for trial. As to air chambers, he uses them or not, according to circumstances. In flat or soft mouths uses the air chamber or the raised ridge. Has not used the flexible air chamber or disk.

Dr. L. D. Shepard referred in highly commendatory terms to "continuous gum" work. Thinks that it is not used more generally because of the impression that it is not within the reach of ordinary classes in the matter of expense. Regards this idea as a great mistake, especially in view of the future. He wishes to endorse it in the strongest terms, and hopes that there will be dentists enough in New England who will take hold of "continuous gum" work to produce a *revolution* in a matter that so much needs it. Gold is not used generally, simply because more than one-half of the profession cannot do the work. This is undoubtedly the case, and is greatly to be regretted, and explains why rubber, celluloid, etc., are so generally used. Large numbers of dentists cannot even repair a gold plate, especially the younger members, and this fact has done much to keep the profession back in the line of advancement in this direction.

Any material that is not a conductor of heat and cold will produce an inflamed condition of the mouth. Any material that does not allow of changes of temperature in the mouth should not be used.

Dr. O. R. Post agrees with Dr. Shepard, and urges that nothing be done, either in plate work or filling teeth, to cheapen the price of our work.

Dr. F. Searle: What is the principle by which this inflamed condition of the mouth is produced? Is it anything more or less than congestion, induced by the pressure of the plate? I have not taken stock in the idea that it is produced by the non-conductibility of the plate. The same condition was noticed with gold, before rubber ever came into use. If every dentist in New England would discard every other material and confine themselves to gold, we should still find this congestion, but perhaps not to the same extent. Some persons can tolerate what others cannot. Before we can either approve or condemn, we should know the principles involved. He does not find as bad conditions with gold as rubber. Thinks that the congestion may be caused by the unnatural pressure, and by wearing the plate during the night.

Dr. H. M. Miller wants to know if it may not be attributed to the mercury in the rubber? Has this inflamed condition of the mouth ever been seen where black rubber is used?

Dr. D. Murlless has, in the course of his practice, seen at least one case where extensive inflammation was present and the patient was wearing a black rubber set.

Dr. L. Noble reports a case of exceedingly troublesome inflammation, which was cured by simply not wearing the plate during the night and the use of a simple astringent wash.

Dr. L. D. Shepard: The point that Dr. Searle makes is a pretty important one. Perhaps I do not see as much of plate work as some. Still, I have had considerable experience with gold work; and I have noticed that where gold plates do not fit well, or where there are clasps, ridges, etc., used, the same red, inflamed condition is present; but when a gold plate has been made with equal skill to that of a rubber set, I still think that the chances are in favor of gold. Also argued in favor of the patient having two sets, and frequently changing them, as it changes the bearings, which he considers a strong point. Does not advise taking the plate out at night. Prefers to change them, having one set for the night and another for the day-time. It is too great a strain upon the muscles of the mouth. Knows of many gentlemen who have a change of boots for every day, or week, to relieve their feet and corns. The principle is the same in both cases.

Dr. F. Searle: My apology for saying anything more on this question is because I regard it an important one. In regard to the poisoning of mouths by the use of rubber plates, I believe that in many cases the poison is in the system, rather than in the plate. He cited a case where a gold plate tarnished badly and repeatedly after being thoroughly cleansed from time to time, the lady not being in good health. After awhile it began to tarnish less, and finally ceased altogether. In the mean time she had recovered her health. She had taken a good deal of medicine, and I think she had at some time been salivated. In these cases of inflammation and poisoning, the mercury may be in the system.

Dr. D. Murlless thinks that many times gold fillings are tarnished or discolored from the same cause.

Dr. A. A. Howland cited the case of a lady where the mouth was red and inflamed, showing signs of salivation. She was wearing a plate of red rubber. Replaced the same with black rubber, and in five days the inflammation was entirely reduced.

Dr. C. T. Stockwell had a case with the same symptoms as described by Dr. H., and substituted celluloid for the red rubber with good results.

Dr. L. D. Shepard thinks that much of this condition may be due to the use of the air chamber. He would use simply a small flat spot without any ridge.

Third topic taken up, to wit: "Incidents of Practice, Special Operations, etc."

Essay by Dr. D. H. Smith, of Holyoke, Mass. Paper on file.

Dr. D. Murlless: What are the supposed benefits of swabbing out the root cavity daily, etc.?

Dr. D. H. Smith: My theory is, that the main thing to do is to keep the cavity *thoroughly* cleansed, and let nature do the work. I do not believe so much in medication as some do. In cases of a fistular opening, I thoroughly cleanse the root cavity until the opening is closed or the putrescent condition disappears, then fill the upper portion of the root cavity with the powder of oxychloride of zinc, and finish with gold.

Dr. L. Noble: In my early practice I used to nearly always adopt the course indicated by Dr. Smith, and with as good results as with any other treatment. I was at that time practicing in Washington, and found that Dr. Maynard adopted the same course. There are, of course, exceptions; but my point is, that *every* case does not need so much medicine as some seem to suppose.

Drs. Searle and Shepard opposed, in a conversational way, the theory of the treatment as indicated in the paper, claiming that the abscess must be broken up, either by a medical or surgical agency, before the tooth can be safely filled.

Dr. D. H. Smith: I believe that ninety-nine out of every hundred of these dead teeth can be saved. I usually use simply the tincture of myrrh as a cleansing agent, and trust to nature to do the cure.

Dr. J. Beals: My method of treating abscessed teeth, when there is a fistulous opening, is this: I inject through the tooth a preparation of carbolic acid, camphor and chloroform—about one-tenth carbolic acid; and then—often at the same sitting—fill the root with cotton wet with oxychloride of zinc. This treatment I have found generally very satisfactory.

Dr. O. R. Post, of Brattleboro, Vt., remarked, in regard to ulcerated teeth, that in some cases the results are fearful if they are allowed to remain in that condition for any great length of time. Especially is this the case with the molars. If the ulceration cannot be overcome, they should be extracted.

In proof of this statement, he exhibited a specimen of necrosis of the inferior maxillary removed from a lady fifty years of age by Dr. H. D. Hatton, of Brattleboro. The specimen represented a large exostosis, extending from an inch from the symphysis posterior to the angle on the left side.

It was somewhat larger than an English walnut, and consisted of a thin, bony tumor, which enclosed three distinct cysts, filled with a sero-

purulent fluid. The original bone, excepting a ridge of the inferior portion of the body, was all absorbed, and its original site occupied by this abnormality.

The operation consisted in sawing through the entire body of the bone, anterior to the tumor and posterior to the canine tooth. This done, the bone was separated from all surrounding tissue, and disarticulated at its junction with the glenoid fossa of the temporal bone.

The periosteum was preserved as much as could be; that covering the ramus was normal, but that enclosing the tumor was in a degenerating condition. The entire inner surface of the growth was in a carious condition.

This affection was of several years' duration, and was undoubtedly due to ulcerating teeth, which she had neglected to have cared for, and without question these were the existing cause of the subsequent disease.

At this stage Dr. C. A. Brackett, of Newport, the Chairman of the Executive Committee, in their behalf arose and addressed the convention somewhat as follows :

Mr. President, and gentlemen of the Society : If almost any one of us were called upon to state to what particular invention, from among the many with which our profession has been favored within the past few years, he felt himself the most indebted, I am sure the reply would be almost unanimous in favor of the rubber dam.

It consequently affords me *very great* pleasure to be able to introduce, to-day, to this Society, the author of this invention, Dr. S. C. Barnum, of New York.

This announcement was received with very earnest and long-continued applause by every member present.

Dr. S. C. Barnum : I hardly know what to say after such an introduction and such a reception at your hands. When I received an invitation from one of your members to be present at this meeting, I determined at once to come and see you. I felt as though I must. I was very warmly received by one and another by the hand, but I was not prepared for this. Were I able to express myself, I should most gladly do so—but at this time I cannot. Therefore I can only *thank* you, which I do most heartily.

Voted, that Dr. S. C. Barnum, of New York, be elected as an honorary member of this Society.

Thanking the Society for the honor conferred, and assuring them that it was an honor highly appreciated, Dr. Barnum proceeded to relate, by request of a member, the history of the circumstances connected with the discovery of the rubber dam, as follows, to wit:

At the time when the idea of the rubber dam dawned upon my mind, I was practicing in Monticello, Sullivan Co., New York. It was the result of much persecution from the inroads of saliva. I had spent many an hour, weary and distracted, battling against its incursions. Many a sleepless night had I over sad failures, chagrined and helpless before the enemy, with the one absorbing question ever before me unanswered, "How shall I keep the cavities dry?" The answer came; and I may say that I was led to the discovery in this manner. In plugging cavities near the gums, I had adopted the use of rubber rings or ligatures around the necks of the teeth, crowding them well up under the free margins, thereby cutting off the ooze from them. Also in plugging the upper teeth I placed a piece of oil silk beneath the napkin, it preventing the accumulating moisture in the floor of the mouth from being taken up and soaking the napkin. These two things led me to the thought, can I join the ring of rubber to the apron of oil silk?

In the fall of 1863 I procured some sheet or elastic rubber cloth for the same purpose I had been using the oil silk. How soon after that the idea of cutting a hole in the rubber and slipping it over the tooth came to me I cannot now call to mind; but this I have well fixed, that on the 15th day of March, 1864, a case presented itself of a cavity in a lower molar, standing alone, on the left side, in a mouth as wet—well, as water gushing from every duct could make it. In a sort of half desperate way, and partly to try the new idea, I cut a hole in my napkin protector and over the tooth it went. There I found I had the ring of rubber and apron combined! There was the rubber dam! And from that time until it was presented to the profession the following summer, I developed, step by step, many of its important points.

Voted, that Dr. Barnum be invited to become the guest of the Society during this convention; and also that he be invited to give a clinic tomorrow morning.

Adjourned.

#### EVENING SESSION.

Called to order at 7½ o'clock, President Adams in the chair.

The question, "Dental Education and the Obligations of the Practitioner to his Student," was taken up, and an essay read by Dr. C. Johnson, Tompsonville, Conn. Essay on file.

Dr. C. A. Brackett: No man respects more than do I those gentlemen who, without the advantages of a college course, have achieved proficiency in our profession; but there are positions taken by the essayist that, in the light of the present day, ought not to be allowed to pass

without a protest. He has pointed out several inconsistencies, and, perhaps, unjust things, in the course of education and the requirements in our dental schools.

I admit that such things exist. While much progress has been made in the limited time since the establishment of the schools, there are yet difficulties to be remedied and advances to be made. The gentleman has pointed out the evils of the school plan, but he has certainly failed to suggest anything better. Now, is it likely that the average dental practitioner, with self-interest at stake, with no limit as to time, and no standard as to proficiency, except such as he himself sets up, will do better in the way of fitting young men for the practice of dentistry, than an organized body of men with no selfish interest in the work of instruction, and usually giving their services without any pecuniary return? We have all seen numerous instances of the abuses to which the plan of private instruction is liable. In the college course, not only is a reasonable length of time required, but ability to pass examinations and make practical demonstrations must be shown by the candidate before the conferring of the degree.

Dr. Johnson wished to say, in reply to Dr. Brackett, that it was his purpose in writing the essay to present but one side, and *that* the "other side." I expected that it would provoke discussion, and I shall not feel hurt if you denounce it *in toto*. In order to say something new, I must take the course I have.

Dr. O. R. Post thinks that the paper contains many good things. He decidedly approves of the idea of taking the student on trial, and if, after a sufficient time, he is not found to possess the qualities which are requisite to success, we should be frank with him and tell him so.

Dental education should be something more than the student can get at the colleges. He should be an inventive genius, and capable of constructing any piece of work, of making many of his own instruments, tempering them, etc.

Dr. N. Morgan : There is much said of what should be required of a dental student. Now, I think that the student should sometimes test his tutor, and take *him* on trial.

However much may be said on this question, when it comes to the test it is found that the dentist, in a great majority of cases, requires of the student, for at least two out of the three years, simply the dirty work of the office and laboratory, the running of errands, collecting bills, etc., and but little pains taken in teaching him. These things have but little to do with the study of dentistry. Contrary to this, it would seem

that the student should require certain things from the dentist, and just those things which, in time, will fit him for the profession.

We should have a course of study mapped out for him; and not only this, but the dentist should see that he makes proper advancement, by means of conversation, questioning, etc. We should also lead the student to study into cause and effect, and not to simply accept statements of facts without a reason for so doing; and, in fact, all means should be used to develop the student into an independent man and dentist. When this is done, the day will not be far distant when the medical profession will recognize the dental, or, at least, when the dental profession will not care whether they are recognized or not, knowing that the position taken by them they are abundantly able to maintain.

Dr. H. M. Miller: There are a good many things in that paper that we like. Among other things, it suggests that the practitioner should submit himself to a *rigid self-examination* before he takes a student. It may be that it would be a good thing if he should sometimes submit himself to this self-examination at times when he does not contemplate taking a student. I like that idea.

Dr. L. Noble thinks that one of the important things which the student learns in a dental college, is that he learns *how* to learn. We cannot properly perform many operations without the knowledge of anatomy, and we cannot successfully study anatomy outside of the dissecting-room. Prof. Bond used to say to his graduating classes: "I do not want you to go out considering yourselves masters of your profession, but go out prepared to learn how to learn your profession."

The fifth topic on the programme, "Filling Teeth, and Preparations of Gold for Fillings," was opened by a paper by Dr. L. C. Taylor, of Hartford, Conn. Essay on file.

Dr. Taylor illustrated his theories, as stated in his paper, by the presentations of models showing the position of the matrix in proximal cavities in bicuspid and molars.

Dr. L. D. Shepard: For myself, I do not approve of using the matrix in the way indicated, especially with cohesive gold. Would also take exceptions to the essayist where he says that by burnishing the filling can be condensed to any considerable extent. When cohesive gold is used, do not believe it is condensed to any great extent by hammering or malleting. It only condenses, or fills the pores of the gold, on the surface alone. Cohesive gold should not be malleted very hard—only lightly. If cohesive gold is used in such cases as described in the paper in connection with the matrix, as illustrated, failures will be likely

to occur. Thinks that the matrix should not extend more than one-half or one-third of the way up on the cavity. Regards the matrix as a possible snare to some in such cases as described. There should be space enough between the tooth and matrix to allow the gold to be forced between them. Should commence, at least, such fillings with non-cohesive gold.

Dr. Taylor: I recognize the point made by Dr. Shepard. These extreme points of the cavity should always be started, at least, with non-cohesive gold, and particular care should be taken to fill thoroughly against the matrix. Hand pressure is much safer than the mallet. The mallet will crack the enamel of the tooth if used in filling frail teeth, and oftentimes make poor work.

Dr. F. Morgan sometimes uses the separating file for a matrix, cutting the same to a proper shape, so as to allow the gold to be forced over the edge of the cavity.

Dr. L. D. Shepard illustrated his method of filling a proximal cavity by the use of the blackboard; as also did Drs. C. S. Hurlbut and D. Murlless their method of filling crown cavities.

These illustrations excited considerable discussion, which, to those present, was practical and interesting; but the *discussion*, if reported independent of the *illustrations*, would probably seem unintelligible.

The Committee on Resolutions reported the following:

*Whereas*, We have learned with sorrow of the death of Elijah Huntington, D.D.S., of West Randolph, Vt.;

*Resolved*, That in his death the Connecticut Valley Dental Society has lost a valued and highly esteemed member, the profession a man of high promise of professional eminence, and the community an esteemed Christian gentleman.

*Resolved*, That we tender to his bereaved family the expression of our warm sympathy.

*Resolved*, That a copy of these resolutions be forwarded to his family and to the dental journals.

Respectfully submitted,

J. S. HURLBUT, N. MORGAN,  
O. R. POST, F. SEARLE,  
L. D. SHEPARD.

*Whereas*, Our friend and honored ex-President, J. J. Anderson, D.D.S., of Springfield, has been removed from us by death since our last meeting;

*Resolved*, That the members of the Connecticut Valley Dental Society

heard the announcement of his sudden death with great sorrow. Through many years of acquaintance and association they had learned to love him for his genial and kindly nature, to respect him for his independence of character, his manliness and high principle, and his devotion to the best interests of the profession and the Society. In his career, to a greater extent, probably, than in that of any other whom we know, could be seen the beneficent results of the stimulus of co-operation in Society work. He was always active in our meetings, seldom absent, ever on the alert to gain from others, or to freely give from his own store, and, as a result, he had secured growth for himself and high position in the profession and the community.

*Resolved*, That we will ever cherish his memory as that of a true and loved friend, and keep his example before us, to urge us on to renewed efforts to perfect ourselves in our chosen calling, elevate its standard and increase its usefulness.

*Resolved*, That we tender to his family the expression of our sincere sympathy in this their great bereavement.

*Resolved*, That a copy of these resolutions be forwarded to his family, to the dental journals and to the Springfield daily papers.

Respectfully submitted,

J. S. HURLBUT,

F. SEARLE,

O. R. POST,

L. D. SHEPARD,

N. MORGAN,

*Committee.*

These resolutions were unanimously adopted, after which the convention adjourned till eight o'clock the second day.

#### SECOND DAY.

Opened at eight o'clock, A. M., with a clinic at the office of Dr. J. Beals.

Dr. S. C. Barnum, of New York, illustrated his method, or various methods, of applying the rubber dam. Dr. L. D. Shepard, of Boston, gave a clinic, illustrating the making and use of cylinders of non-cohesive foil, put in by hand pressure and automatic mallet; and Dr. F. Searle, of Springfield, demonstrated his theory of treating alveolar abscesses, by an operation upon a case of long standing, in accordance with the statement of his method at the early part of the session.

Regular session opened at 10½, A. M., President Adams in the Chair.

The seventh topic, "Plastic Fillings," was taken up, and a paper read by Dr. C. L. Anderson, of Springfield. Essay on file.

Discussion of this paper was, by vote, deferred, in order to listen to a paper on the subject of "Cleft Palates," by Dr. A. F. Davenport, of North Adams. Paper on file. (Published in August MISCELLANY).

Dr. L. D. Shepard: I wish to say a few words in reference to the early part of the paper, in which I was especially interested.

I have given considerable attention to the subject of nutrition, and have no doubt but that much benefit may be gained for the tissues of the teeth by a proper attention to the matter of a hygienic diet during the pregnant condition. It is very often difficult, however, to induce the mother to use such food as is desirable or necessary to bring about this result. The appetite of the child-bearing woman is, when in such condition, often very capricious, and they want, or imagine they want, this and that thing, and it is a time when she *should* be indulged and have her own way as much as possible. Therefore it is difficult to regulate this matter during gestation. But after birth the matter may be more readily regulated, and the hereditary taint may be more or less overcome. I have no doubt but that it may be, at least, modified. But how shall we begin, and when?

We may learn the state of germ teeth during the nursing period, and down the various stages of their development. They are affected by various diseases, such as the rash, measles, etc. Lines, marks, etc., can often be seen in after life to remind us of some sickness, and in this we can see what a disturbance of the supply of nutrition can do. If this is so, why may not the normal or a proper hygienic condition produce a more perfect development?

I have looked into this matter with a great deal of interest, and have for years been making a series of experiments, from which I hope to see results that will afford some ground for the development of a definite theory in regard to this matter.

We, as a profession, ought to take a deep interest in this question, be leaders in the matter, and endeavor to bring about a reform regarding the diet. He has adopted a course in his own family which he carries out, and is watching to see what the effect will be. Whether the result will be good or not, is to be decided. At his own table he uses cracked wheat, oat-meal, etc. Is interested in doing away with fine flour. In that, the best part is taken away and given to the cattle, hogs, etc. He would not use the hull, which is indigestible, but all the other parts, as in *cerealine*, a new preparation of wheat, and some others. Thinks that these new preparations will be, and should be, used much more generally in the future. Graham is often not a proper

preparation for use, being frequently made from a poor quality of wheat. We cannot bring about a reform in this matter unless we can obtain something *palatable*, for we cannot crowd down people's throats that which they do not relish. Cerealine is much more palatable than any other preparation that he has used. It may be obtained at J. C. Fernald & Co.'s, 209 Tremont Street, Boston.

A good recipe for its use is, one cup flour, three cups cerealine, one egg, one-half cake yeast, salt, and mixed with milk; baked as "gems."

We must create a demand for such food, and then it will be furnished and used.

Spoke also of a preparation of wheat and barley called "brain food."  
Adjourned.

C. T. STOCKWELL, *Secretary.*

The attendance was quite unusually large, about sixty being present, and a genuine interest was manifested through the entire session. It may, most emphatically, be termed a working session, from beginning to end. The accommodations at the Mansion House were excellent, and the attentions and courtesies of the landlord and his attendants were highly satisfactory.

The Secretary is under many obligations to Dr. D. H. Smith for valuable assistance in making these reports.

C. T. STOCKWELL, *Secretary.*

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## SEVENTEENTH ANNUAL SESSION OF THE AMERICAN DENTAL ASSOCIATION.

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The American Dental Association began the sessions of its seventeenth annual meeting Tuesday, August 7th, in the Grand Pacific Hotel, Chicago. There was a very large attendance of members, the following being present at the opening:

W. H. Goddard.....	Louisville.	A. W. Harlan.....	Chicago.
George H. Cushing.....	Chicago.	M. S. Dean.....	Chicago.
J. F. Merriman.....	Ottawa.	M. S. Hand.....	Joliet.
J. N. Crouse.....	Chicago.	F. B. Davis.....	Springfield.
L. D. Shepard.....	Boston.	W. H. Morgan..	Nashville, Tenn.
Thomas Fillebrown.....	Portland.	E. C. Stone.....	Galesburg.
M. H. Webb.....	Lancaster, Pa.	George F. Waters .....	Boston.

A. H. Brockway.....	Brooklyn.	Joseph Lathrop.....	Detroit.
F. H. Fredericks....	New Orleans.	H. H. Jackson.....	Detroit.
Horace A. Mansfield...	Evanston.	Homer Judd.....	St. Louis.
Jacob L. Williams.....	Boston.	C. R. E. Koch.....	Chicago.
E. Honsinger.....	Chicago.	L. C. Ingersoll.....	Keokuk.
J. C. McCoy....	Boonesville, Mo.	F. M. Odell.....	New York.
E. D. Swain.....	Chicago.	Gorton Nichols.....	Chicago.
W. C. Dyer.....	Chicago.	J. A. Wattling,	
J. Taft.....	Cincinnati.	Michigan University,	Ann Arbor.
G. T. Barker.....	Philadelphia.	T. W. Brophy.....	Chicago.
W. H. Atkinson.....	New York.	C. A. Kitchen.....	Rockford.
J. C. Noel.....	Nashville, Tenn.	E. L. Talbot.....	Chicago.
George W. Keely...	Oxford, Ohio.	W. N. Morrison.....	St. Louis.
E. Osmond.....	Cincinnati, Ohio.	J. H. McQuillen ...	Philadelphia.
S. M. Sturgis.....	Quincy, Ill.	Corydon Palmer.....	New York.
Charles J. Kelly ...	Oxford, Ohio.	A. S. Chapman.....	Princetown.
S. B. Brown....	Fort Wayne, Ind.	A. C. Rawles.....	Lexington, Ky.
Merit Wells.....	Indianapolis.	J. B. Kidd.....	Lexington, Ky.
Edgar Palmer.....	La Crosse.	G. B. McDonald,	
T. M. Hurtt.....	Peoria.	Conneautsville, Pa.	
W. W. Allport.....	Chicago.	J. P. Wilson ...	Burlington, Iowa.
George R. Thomas.....	Detroit.	H. A. Smith.....	Cincinnati.
W. O. Kulp...	Davenport.	C. W. Spalding.....	St. Louis.
John Campbell....	Bloomington.	D. W. Clancy.....	Cincinnati.
C. D. Cook.....	Brooklyn.	A. W. Freedom.....	Chicago.
C. S. Smith.....	Elgin.	John Allen.....	New York.
W. S. Howe.....	Cincinnati.	George L. Field.....	Detroit.
J. A. Harris.....	Pontiac, Mich.	F. H. Rehwinkel ...	Chillicothe.
Charles P. Pruyne.....	Chicago.		

The membership of the Association now embraces about 300.

Dr. George W. Keely, of Oxford, Ohio, the President of the Association, was in the chair, and called the convention to order at 10:15 o'clock in the forenoon. Dr. C. S. Smith was Recording Secretary.

At the conclusion of preliminary routine business, Dr. C. S. Smith, on behalf of the Committee on Publication, stated that five hundred copies of the annual report of the Association's Proceedings of 1876 had been issued at a cost of \$422.63. The report was accepted.

Dr. W. H. Atkinson, on behalf of the Special Committee on Sections, reported that the committee had considered the idea of forming the organization into permanent sections, and was impressed with the im-

portance of such a movement in furthering the advancement of the members of the Association in the several lines of dental science. The report was received, and its full discussion set as the order for the day to-morrow at 10 A. M.

Secretary Randolph extended an invitation to the Association to visit the Chamber of Commerce. The invitation was accepted.

Mr. M. S. Dean, of Chicago, Chairman of the Committee on Physiology, read a paper on the subject, which was discussed by Dr. Atkinson, of New York ; Dr. Chase, of St. Louis ; Dr. Robertson ; Dr. Homer Judd, of St. Louis ; Dr. Spalding, of St. Louis ; and Dr. McQuillen, of Philadelphia.

The Association then adjourned until 3 P. M.

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AFTERNOON SESSION.

The Association convened at 3 o'clock. Dr. L. C. Ingersoll, of Keokuk, Iowa, read a paper on "Is the dental pulp essential to the integrity of the dental structure?" The paper was a very able and interesting one, to give any part of which without publishing it in its entirety would be to do injustice to the author. It was fully discussed by the members of the Association from a scientific stand-point.

Dr. A. O. Rawls, of Lexington, Ky., and Dr. Barker, of Philadelphia, dissented from the opinion of Dr. Ingersoll. The latter gentleman took rather a funny view of the ideas advanced by the essayist, pointing out what seemed to him its weak points.

Dr. Sturges, of Quincy, Ill., came in good-natured and well-received remarks to the rescue of his friend, Dr. Ingersoll. If the paper was thought by the gentleman from Philadelphia (Dr. Barker) to be faulty and misleading, Dr. Sturges was sorry for Philadelphia, and thought that Keokuk was just so much ahead in this particular. The address of this gentleman was creative of much merriment.

Dr. Robertson, of New Hampshire, added some interesting experiences concerning the subject from his long practice.

Dr. Ingersoll answered the objections which had been made to his paper by some of the members of the Association.

Drs. Allen and Atkinson spoke on the subject, when Dr. F. H. Rehwinkel read a paper on "Pyorrhea alveolaris," and the Association adjourned.

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SECOND DAY'S SESSION.

The second day's session of the American Dental Association con-

vened Wednesday, August 8th. Dr. George W. Keely, President, in the chair.

The Treasurer, Mr. William H. Goddard, presented his annual report, from which it appears that the balance on hand August 1, 1875, was \$175 ; cash collections during the year, \$715 ; total \$890 ; expenditures, \$601.36 ; balance to date, \$288.64.

Dr. Farrar's paper on "North light *vs.* Sunlight," was then read by the Secretary. It covered some fifty pages of legal cap, and the reading consumed the better part of an hour. The paper related chiefly to the health of dentists, the author holding that steady attention to work in a north light was productive of weakness and disease. Health and comfort suggested the freer use of sunlight, which, according to Sir David Brewster, was the very life-blood of nature. The vital statistics of hospitals would reveal the fact that those who enjoyed the sunlight thrived far better than those who did not. And yet some physicians were so blind to these facts that they persisted in the worship of that dangerous idol, north light. The detrimental effect growing out of the absence of sunlight was seen among the operatives of our factories, among the poor huddled together in dark tenement houses, in their pale, lean, cadaverous faces, and the general air of weakness which seemed to be one of the accompaniments of their existence. The author of the report detailed various experiments made with bay-windows placed in such positions as to get the greatest share of sunlight, and recommended that, where it was possible, dentists should have a southwest bay-window, through which the warm, health-giving rays of the sun could shine from morning till night.

Dr. McQuillen, of Philadelphia, said he used to be in favor of north light. That was when he was young. At that time a medical friend told him he would change his views when he reached more mature years. That change had come. He would even advise people to walk on the sunny side and not the shady side of the street, although he was compelled to admit that it might be well in July and August to look out for sunstrokes.

Dr. Spalding, of St. Louis, thought a liberal eating of fruit would prove of advantage to those who could not get the sunlight.

Dr. Waters, of Boston, related how he had succeeded, through the agency of the sunlight, in hastening the growth of the wriggling tadpole into the juvenile frog. He, also, was in favor of the fruit diet.

Dr. Rehwinkel, of Chillicothe, O., could not speak too highly of the paper. It should be published and studied. Mothers should read it

and follow out its suggestions. He alluded to the prevalent American practice of shutting up a house so as to keep out the sunlight during the day, and remarked that it was all wrong.

Dr. Thomas, of Detroit, said a south room was to be preferred even on the score of comfort, as it was cooler than a north room. As far as light was concerned, there was no question that the light coming from the south was superior to that from the north.

Dr. Barker, who started out with the rather incredible statement that he was a modest man, undertook to overthrow the conclusions arrived at in the paper, which were the obvious sense of the Association. He cited his own case, said he had operated for twenty years in a north light, alluded to the ways of artists and mechanics who used the clear north light, and concluded by showing a sun-burned hand as an evidence that the north light had exercised no detrimental effect upon him.

Dr. Freeman, of Chicago, said it was not the fault of some people that they were strong and hearty enough to eat sole leather. [Laughter.] In like manner, Dr. Barker's strong, vigorous nature could withstand the baneful effects of the north light.

Dr. Atkinson was disposed to criticise the paper. In the first place, light was light, whether it came from the north or from the south, and he believed that more eyes had been injured by too much than by too little light. There was too much of an easy-going disposition to accept the statements of those who had made experiments in this matter as conclusive, but authorities could not, in his opinion, sway the eternal principles of verity.

The discussion proved very fruitful of "opinions," and the subject was finally dropped with the implied recommendation that dentists should take frequent sun-baths, even if they did not draw, plug, and fill people's molars and incisors by the aid of the sunlight.

At this point the Association adjourned until 3 P. M., to enable the members to accept an invitation to visit the Board of Trade.

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AFTERNOON SESSION.

On reassembling Dr. Rehwinkel moved to admit as honorary members Dr. Adolf Petermann, of Frankfurt-on-Main, and Dr. George Von Langsdorff, of the University of Freiberg. The motion was carried, and the Secretary instructed to notify these gentlemen of their election.

Some discussion took place on Dr. Rehwinkel's paper on "Pyorrhea Alveolaris," *i. e.*, loosening of the gums. The paper itself took the

ground that there was a cure for this disease, which had previously been considered incurable, and the mode of treatment which it recommended was the continuous removal of the tartar and the treatment of the gums with thymale alcohol.

Dr. Rawls, of Lexington, Ky., did not think the author of the paper had touched the real cause of the disease. In fact, according to Dr. Rawls, the cause of the disease was not known, and the proposed treatment would not, in his opinion, meet the case.

Dr. Shepard, of Boston, spoke favorably of the treatment pursued by Dr. Riggs, of Connecticut. According to Dr. Riggs, this disease was constitutional in its origin and results, and his treatment consisted in the surgical removal of the deposit on the teeth. Dr. Shepard cited a case where a patient had lost his appetite, suffered from dyspepsia and other uncomfortable symptoms, and this treatment of Dr. Riggs had restored him to perfect health in six weeks. In Dr. Shepard's opinion, surgical treatment alone insured recovery.

Dr. Palmer, of New York, thought too much time was being spent on this subject. In his opinion this disease had received more attention and had been raised to more importance than it deserved. Any dentist could treat it by following the ordinary teachings of his profession.

Dr. Barker, of Philadelphia, contended for a treatment which should take into account systemic remedies and hygienic rules.

Dr. Atkinson was disposed to quarrel with those of his brethren who, in the course of the discussion, had called this disease an abscess. It wasn't an abscess, or any such thing, but an ulcer. Dr. Atkinson put no faith in mere surgical treatment, and recommended, in addition to the cleaning of the tooth and the scraping away of the deposit, the washing of the tooth with warm salt and water, after which the pocket should be filled with aromatic sulphuric acid. The Doctor also paid considerable attention to the subject of diet, the proper care of the teeth, etc.

Dr. McQuillen, Dr. Rehwinkel, Dr. Judd, Dr. McDonald, and others prolonged the discussion until after six o'clock, when an adjournment was had until the evening session.

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#### EVENING SESSION.

The Association was called to order at 8:15 o'clock.

Dr. Allen, of New York, introduced a resolution providing for the appointment of a committee of three to revise the code of dental ethics, so that a harmony might be created that did not now exist.

The resolution was discussed pro and con by Drs. Spaulding, of St. Louis, Morgan, of Nashville, Tenn., and Allport, of this city, and was finally indefinitely postponed.

Dr. Edgar Palmer, of La Crosse, Wis., then read a paper entitled, "Alcohol, and its Effect upon the Teeth." The paper was full of interest, and lengthy. It first treated on the effect of alcohol on the physical system, wherein it was argued that alcohol was without nourishment, and the taking of it into the stomach was to superadd to the necessities of organic life. Secondly, it treated of its effect on the membranes, and the conclusion was reached that alcohol contributed largely to the degeneracy of the dental organs.

The paper was discussed by Dr. Atkinson, of New York, and placed on file and ordered printed.

Committee reports were next called for, but, no reports being ready, they were passed.

Dr. J. S. Cassidy, of Covington, Ky., read a paper on "Chemistry," which occupied thirty minutes.

The Association then adjourned.

#### THIRD DAY'S SESSION

began August 9th at 10 o'clock, A. M. The attendance was fully up to the average.

The special order was then taken up, the report of the Special Committee recommending the division of the Association into permanent sections. After considerable discussion, the report was recommitted.

The next thing in order was the reading by Dr. Taft of a paper prepared by Dr. E. G. Esigg, of the Committee on Chemistry, on the subject of "Mercury and Its Compounds in Dentistry."

The report went on to say that the objection had been brought against the red vulcanized rubber plates that they contained free mercury, and were, therefore, poisonous. The report took the precisely opposite ground, the author detailing several tests made which showed that the red plates do not contain free mercury.

Dr. Palmer, of New York, claimed that there was free mercury in such plates, and mentioned instances where persons had suffered from using them.

Dr. Kulp remarked, in reply to Dr. Palmer, that the facilities for experiment were present, and he would like to see a proof of his statements. For some reason or other the offer was not taken.

Drs. Gardner, Robertson, Noel, Osmond, Frederick and others continued the discussion, some holding that the mercury in the vulcanite was insoluble, and therefore harmless, while others took the opposite

view. Each side related the results of experiments, and tried to prove the correctness of its position. Dr. Judd's remarks were rather practical, and were received with considerable favor. He said these experiments were likely to run, and had run, into ridiculous extremes. It was claimed that this sulphuret of mercury was insoluble. The truth was that it was just about as insoluble as arsenic, and if anybody wanted to experiment with arsenic, there was no objection to his taking a spoonful into the mouth, and seeing whether it would produce any effect or not.

Dr. Shepard read the paper of Dr. C. A. Brackett, of the Committee on Therapeutics, on "Dental Therapeutics." The report considered the usefulness of the various pain-destroyers in use, spoke a good word in this connection for carbolic acid with arsenious acid, and for salicylic acid, but closed with the statement that of late years there was a growing disposition to avoid the use of any of these agents, except in the very severe operations.

At this point the Association adjourned until afternoon.

#### AFTERNOON SESSION.

On re-assembling in the afternoon, Dr. F. M. Odell, of New York, read an exhaustive paper on the general subject of "Therapeutics." The report concluded with the declaration that habits of cleanliness, good ventilation, abundant supply of good food, proper regulations as to time and quantity in regard to eating, a full satisfaction of the system in its demand for sleep, attention to business which should leave no time for sickness, were measures both prophylactic and therapeutic, and which, if followed out, would lead to the greatest earthly happiness.

Dr. Atkinson, one of the wisest heads in the Association, spoke of Dr. Odell's paper as the best correlation and statement of the nature of disease and its treatment he had ever heard. In fact, it was such an able presentation of the whole matter, that he had not a single criticism to make.

Some further discussion ensued on the subjects treated of in the papers read at the morning session. Dr. Judd, Dr. Atkinson, Dr. Rehwinkel and others had "views" to pronounce.

Dr. G. H. Cushing, of Chicago, Chairman of the Committee on Operative Dentistry, read a report on the present status of that branch of the profession. He spoke of the materials in use in the filling of teeth, and stated, as the result of an extensive correspondence with leading dentists, that the use of tin in combination with gold had been resorted to to a very limited extent, and that the use of amalgam, as well as non-cohesive gold, had largely increased, and was still increasing. Operative dentistry to-day occupied a conservative position, running neither to one

extreme nor the other, as regards methods. In conclusion, the report stated that one of the great needs of the present day was the organization of one or two institutions liberally endowed, and independent of the tuition of pupils.

The last sentence, particularly, was received with applause.

A. W. Harlan, of this city, read a supplemental report on the same subject. According to this document, amalgam was far inferior to gold in fillings.

The report was briefly discussed by Dr. Rawls, Dr. Howe, Dr. Webb and others.

At five o'clock the Convention adjourned until evening, and the members, in the mean time, enjoyed a carriage ride to Lincoln Park, up and down the Lake Shore Drive, and back down town through the avenues on the North Side.

#### EVENING SESSION.

The Association was called to order at 8:30 o'clock.

Dr. Keeley, of Ohio, introduced a resolution providing for amending the Constitution so that in the future local Associations should be entitled to one delegate to the General Association for every fifteen members. Laid over under the rules.

On motion, an order was drawn for the salaries of the Secretary and Treasurer.

Prof. Taft, of Cincinnati, introduced a resolution providing for the appointment of a committee of three to revise the nomenclature and terminology used by the profession, to report at the next meeting.

After some discussion the resolution was adopted, and Drs. Taft, Judd and Atkinson were appointed as the Committee.

The election of officers for the ensuing year was then proceeded with, resulting as follows:

President—Dr. F. H. Rehwinkel, of Ohio.

First Vice-President—Dr. L. D. Shepard, of Boston.

Second Vice-President—Dr. G. T. Barker, of Philadelphia.

Corresponding Secretary—Dr. M. H. Webb, of Philadelphia.

Recording Secretary—Dr. M. S. Dean, of Chicago.

Treasurer—Dr. W. H. Goddard, of Louisville.

Executive Committee—Dr. Homer Judd, of St. Louis; Dr. J. H. Filiebrow, of Portland, and Dr. W. H. Morgan, of Nashville.

Niagara Falls was selected as the place for the next meeting, and the Association adjourned for the day.

#### FOURTH DAY'S SESSION.

The fourth and last day of the Seventeenth Annual Session of the American Dental Association opened Friday, August 10th.

After some miscellaneous business was transacted, the following were elected honorary members of the Association :

J. Smith Turner, M.R.C.S..... London.  
 Mordaunt Stevens, M.D., D.S., M.R.C..... Paris.  
 Charles S. Tomes, M.A., M.R.C.S..... London.  
 John Tomes, M.R.C.S., M.R.S..... London.  
 E. Mosgitol, M.D..... Paris.  
 Prof. Wedl..... Vienna.

Dr. Taft, of Cincinnati, consumed considerable time in taking exceptions to a clause in a newspaper's report of yesterday, and abusing the reporter who had dared to call the Treasurer of the Association a "watch-dog," and presumed to publish the fact that he had a gruff voice.

Dr. Allport, of Chicago, offered the following resolution, which, after some little discussion, was adopted:

*Resolved*, That this Association fully endorses the action of its Treasurer, W. H. Goddard, in exacting dues in full of all members before they are allowed to take part in the proceedings, and in so doing he is only carrying out the law.

Dr. Corydon Palmer, of New York, submitted a short paper, or rather lecture, on "Operative Dentistry," which he illustrated by figures and diagrams upon a blackboard.

This called out an interesting discussion from the members of the Convention—Drs. Hall, of St. Louis; Waters, of Boston; Prof. Taft, of Cincinnati; George Thomas, of Detroit, and McDonald, of Pennsylvania. A letter upon the subject of "Transplanting," from Dr. W. N. Morrison, of St. Louis, was read by the Secretary. The subject was then resumed by Dr. Barker, of Philadelphia; Dr. Rawls, of Kentucky; Dr. Ingersoll, of Iowa; Dr. Allport, of Chicago, and Dr. Allen.

The regular order of business was then taken up, being a report from the Committee on Mechanical Dentistry.

Next came the subject of "Education," with a report from Dr. Thomas Fillebrown, of Portland, Me.; and Dr. J. N. Crouse, of Chicago, of the same Standing Committee, also read a report upon the subject of "Dental Colleges," after which the Convention adjourned to half-past two P. M.

#### AFTERNOON SESSION.

Pursuant to adjournment, the Convention re-assembled at the appointed hour.

Dr. Shepard, of Boston, Chairman of the Executive Committee,

offered resolutions of thanks to the proprietors of the Grand Pacific for their kindness to the Assembly in furnishing an assembly-room and stationery free of cost, which, of course, were unanimously adopted.

Dr. Cushing, of Chicago, Chairman of the Nominating Committee, reported the following as the

STANDING COMMITTEES FOR THE ENSUING YEAR.

*Physiology*.—M. S. Dean, C. W. Spaulding, J. H. McQuillen.

*Pathology*.—G. R. Thomas, W. H. Atkinson, D. C. Hawxhurst.

*Histology and Microscopy*.—G. V. Block, G. F. Waters, C. N. Pierce.

*Chemistry*.—F. L. Buckingham, L. G. Noel, W. A. Bronson.

*Therapeutics*.—F. M. Odell, L. C. Ingersoll, C. C. Chittenden.

*Operative Dentistry*.—H. A. Smith, L. D. Shepard, M. H. Webb.

*Mechanical Dentistry*.—A. L. Northrop, H. H. Keith, W. M. Morrison.

*Education*.—J. N. Crouse, Thomas Fillebrown, G. J. Fredericks.

*Literature*.—C. D. Cook, A. H. Brockway, W. H. Morgan.

*Etiology*.—G. T. Barker, D. W. Clancey, J. Frank Marriner.

*Prize Essays*.—H. Judd, W. W. Allport, C. S. Stockton.

The report was unanimously adopted.

Dr. A. H. Brockway, of Brooklyn, Chairman of the Committee on Appliances, read an interesting report on the "Introduction of Modern Inventions in the Practice of Dentistry," which paper was adopted.

Discussion upon the papers of Dr. Fillebrown and Dr. Crouse, read in the forenoon session, was declared in order, and was taken part in by Drs. Atkinson, of New York; Spaulding, of St. Louis; Prof. Barker, of Philadelphia; Judd, of Missouri; Black, of Illinois; Hosman, of Cincinnati; McQuillen, of Philadelphia; Ingersoll, of Iowa; Shepard, of Boston; Fillebrown, of Portland, Me., and others.

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Last evening the Association was tendered a complimentary banquet by the members of the Chicago Association, in the ladies' ordinary of the Grand Pacific. The banquet-hall was fitted up elegantly, as the managers of the Grand Pacific well know how to do. The room was filled with small tables, while a long general table, or series of tables, extended along one side. Each table was provided with a tasty bouquet of rare flowers, which lent their fragrance to increase the charms of the occasion. Hand & Frieberg's band was located in a room adjoining.

Tables were laid for nearly two hundred guests, and many were seen there last evening who were not on deck during the day.

Dr. Cushing, President of the Chicago Association, acted as host, and before the toasts were started, he addressed the assembled guests in a neat little speech, in which he extended a cordial welcome to the strangers. He said the first toast of the evening should be "Our Guests," and he called upon Dr. Dean, of Chicago, to respond.

Dr. Dean made a speech, in which he caused considerable merriment by repeating a statement which he claimed had been made to him by John B. Drake, the proprietor of the hotel, that he "had never seen people so hungry before, and if they kept on eating he should be obliged to send out for some corned beef." The speaker was proud to have the distinguished members of the American Dental Association with them in Chicago.

"The Older Men of the Profession" was responded to by Dr. Allport, of Chicago, who went for Dr. Dean, the last speaker, in a humorous style. He could safely say that he had not seen such a fine array of human beings as visitors in Chicago for many a day.

The other toasts were : "Education, the Corner-stone of our Profession," responded to by Prof. McQuillen, of Philadelphia; "Literature," responded to by Dr. Taft, of Cincinnati; "Inspiration the Divine Influence which Guides us to Success," responded to by Dr. Atkinson, of New York; "Science," responded to by Dr. Homer Judd, of St. Louis; "Way Down East," responded to by Dr. Fillebrown, of Portland, Me.; "Esprit de Corps," responded to by Dr. Shepard, of Boston; "The Old and the New," responded to by Dr. Rehwinkel, the newly-elected President of the National Association; "Our Profession," responded to by Dr. Rawls, of Kentucky; and "Our Brethren of the Medical Profession," responded to by Dr. Rea, of Chicago.

The Chairman announced that the last toast would be "Home, Sweet Home," and would be responded to by the band, and all departed to the tune of "Auld Lang Syne."

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#### NORTH CAROLINA DENTAL ASSOCIATION.

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The North Carolina Dental Association convened in Raleigh, Tuesday, Sept. 4th, 1877.

Dr. V. E. Turner, President, Raleigh; Dr. J. W. Hunter, First Vice-President, Salem, N. C.; Dr. E. L. Hunter, Second Vice-President, Salem, N. C.; Dr. D. A. Robertson, Secretary, Greensboro.

Members present: Dr. D. E. Everitt, W. H. Hoffman, Isaiah Simpson, M. A. Bland, R. T. Conch, E. W. Owen, West Harris, E. Floyd, J. E. Matthews, J. G. James, H. W. Robinson, R. H. Jones.

After a harmonious and interesting session of three days, adjourned to meet in Charlotte, N. C., first Tuesday of September, 1878.

D. A. ROBERTSON, *Secretary*.

J. W. Hunter, President; E. L. Hunter, First Vice-President; D. A. Robertson, Second Vice-President; W. H. Hoffman, Secretary; J. H. Crawford, Treasurer, are the officers elected for ensuing year.

It is earnestly requested that every dentist in North Carolina be present at session of September, 1878. Business of vital importance to the profession will come before the meeting.

Raleigh, N. C.

W. H. HOFFMAN, *Secretary*.

## OBITUARY—DR. J. J. ANDERSON.

### JOHNSTONS' DENTAL MISCELLANY:

Accompanying this you will find a series of resolutions adopted by the "Connecticut Valley Dental Society,"\* relative to the death of Dr. J. J. Anderson, a highly-respected dentist of Springfield, Mass., who graduated from the PHILADELPHIA DENTAL COLLEGE, Session 1866-'7. Although not a contributor to the literature of the profession, he was well known to his professional brethren and the community in which he lived as a skillful and conscientious practitioner. The high esteem in which he was held is made manifest in these resolutions.

He was born in Owego county, New York. His mother died when he was eight years old, and his father at his fourteenth year, when he engaged in learning the trade of a printer, rising at the age of twenty to be foreman of the *Cincinnati Inquirer*. He entered upon the study of dentistry at twenty-three. In the fall of 1866, after having been engaged in the practice of the profession ten years, with the view of fitting himself for a larger field of usefulness, he entered the PHILADELPHIA DENTAL COLLEGE, and was marked for devotion to his studies, regularity of attendance upon lectures, and in taking advantage of the practical opportunities afforded in the Dispensary and Laboratory for learning the latest improvements in those departments. He passed a highly credita-

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\* The resolutions referred to will be found in the report of the meeting of the Society, published elsewhere in this issue.

ble examination before the Faculty. Among his classmates and fellow-graduates were Professor D. D. Smith and Dr. Marshall H. Webb.

While there was nothing remarkable or eventful in his career, the death of one who so faithfully performed his duty while in this world should not be passed by unnoticed. He leaves a son, Dr. Charles J. Anderson, a "worthy son of an honored sire," who succeeds him in practice.

J. H. McQ.

## GOLD—SILVER—TIN ALLOYS.

By HENRY S. CHASE, M.D.

Very much has been said and written during the last three years in regard to the use of amalgams for filling teeth. In that time I have myself made thousands of experiments. These prove that an alloy containing much gold is superior to all others at present known, taking into consideration all the qualities desirable in an amalgam. An alloy containing 20 parts gold, 40 parts silver and 40 parts tin—all *pure* metals—and properly made, requires from 33 to 50 parts of mercury to 100 parts of alloy. It is very plastic, does not harden too quickly, does not contract, makes a water-tight plug, does not change its physical character after twelve months' trial, keeps its color remarkably.

An alloy containing 25 parts of gold, 39 parts of silver and 36 parts of tin, takes a little more quicksilver, becomes hard a little sooner, and has all the good qualities of the 20 per cent. alloy.

A third alloy, containing gold,  $33\frac{1}{3}$ , silver,  $33\frac{1}{3}$ , tin,  $33\frac{1}{3}$ , takes more quicksilver than the last, sets sooner, and has the good qualities of the others.

There are already enough *cheap* alloys in the market, and some of them are very good, too; but they lack qualities which a high per cent. of gold could impart.

I have been solicited to manufacture and put these alloys in market. I could not do so without injury to the cause which I advocate.

I have been offered pecuniary remuneration for the use of my *name* in the manufacture of these alloys, which I have refused for the same reason.

On the other hand, I have consulted with some *well known* and reliable parties, who have agreed to make and put at least one of these alloys on the market immediately.

Any respectable party who wishes to make either of these alloys, will receive from me all the information which I can impart, cheerfully and without expense.

JOHNSTONS'

# Dental Miscellany.

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VOL. IV.—OCTOBER, 1877.—No. 46.

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## OBTURATORS, ANCIENT AND MODERN.

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By N. W. KINGSLEY.

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In some remarks which I shall make on the above-named subject, and subsequently on artificial vela, I wish the distinction which I make between them to be prominently borne in mind.

All apparatus adapted to the roof of the mouth, whether forward or back, to the hard palate or soft palate, may properly be designated as artificial palates; but as such instruments may be divided into two distinct classes, operated upon different principles, and applied, in the main, to entirely different cases without the possibility of interchange of principle, I therefore denominate the one an obturator, and the other an artificial velum.

An obturator, according to this distinction, is a stopper, plug or cover, hard, non-elastic and stationary, fitted to an opening with a well-defined border or outline, and shutting off the passage. Such instruments are of nearly universal application to perforations of the hard or soft palate resulting from accident or disease, but they are rarely applicable to a congenital fissure of the velum.

An artificial velum is not a stationary stopper, but an elastic, movable valve, under the control of the surrounding and adjacent muscles, and closing or opening the passages at will, and are applicable especially to congenital fissures; occasionally, where the soft palate has been destroyed, but never to perforation of either hard or soft palate.

The history of artificial vela is entirely modern, their origin being within the memory of the present generation.

The history of obturators shows them to have been among the earliest applications of mechanism to the mouth.

The first recorded definite suggestion of a piece of mechanism to act as a palatine obturator is that of Alexander Petronius, who preceded the celebrated Ambroise Paré by a few years.

He says: "If the decayed bone of the palate falls of itself, or if we extract it, the pronunciation is altered—so much so that the patient can scarcely be heard. But it is possible, in certain circumstances, to repair this loss; for example, when there is only a hole in the palate, we can stop it up with cotton, with wax, with a gold plate, or in any other way that the genius of the artist suggests, having care to give to these instruments the same concave form as the palatine vault."

The first definite description of an obturator was by Ambroise Paré, whose first work was published in 1541; and although Guillemeau, writing fifty years later, says that obturators were applied by the Greek physicians, it is quite likely it was more a matter of inference by him than an authentic record of a fact. That the principle of an obturator was known to the ancient physicians, and that such a principle would be easily and naturally conceived by a person suffering from a perforation of the palate, is more than probable, and therefore likely that relief was obtained by the very simple means within the reach of every one, such as a piece of sponge or wad of lint thrust into the perforation, or a piece of thin leather, or any membranous substance which could serve the purpose temporarily of a stopper or covering.

But the first recorded attempts at making a permanent obturator by mechanism, are those of Paré before mentioned. Paré's description is as follows: "Many times it happeneth that, a portion or part of the bone of the palate being broken with the shot of a gun, or corroded by the virulency of the Lues Venerea, falls away, which makes the patients to whom this happeneth that they cannot pronounce their words distinctly, but obscurely and snuffling; therefore I have thought it a thing worthy the labour to show how it may be helped by art. It must be done by filling the cavity of the palate with a plate of silver or gold a little bigger than the cavity itself. But it must be as big as a French crown, and made like unto a dish in figure, and on the upper side, which shall be towards the brain, a little sponge must be fastened, which, when it is moistened with the moisture distilling from the brain, will become more swollen and puffed up, so that it will fill the concavity of the palate, that

the artificial palate cannot fall down, but stand fast and firm, as if it stood of itself. (See Fig. 1.) This is the true figure of those instruments

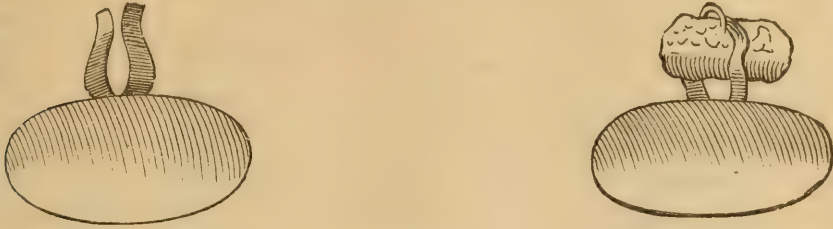


FIG. 1.

whose certain use I have seen not by once or twice, but by manifold trials, in the battles fought beyond the Alps."



FIG. 2.

Paré gives also another form of obturator, as shown in Fig. 2, which resembles very much the cuff-button of the modern toilet. The larger button or disk being adapted to the roof of the mouth, and covering the opening, was connected by a revolving stud or screw to an oblong disk, which represented the extreme length of the perforation. The head of the stud passing through the larger disk and being accessible to a pair of forceps, enabled the wearer to pass the instrument through the opening, when, by revolving the stud, the long diameter of the upper disk was made to bridge the short diameter of the perforation, and thus sustain the obturator. The efficiency of such obturators, if properly adjusted, would seem to leave nothing to be desired.

The loss of speech would be instantly restored, and comparatively little inconvenience would be the immediate result; but time would develop the fact, that any pressure by a foreign substance upon the adjacent tissues, would produce their absorption, and the continued enlargement of the fissure and the swelling of the sponge by the absorption of moisture would be eminently conducive to such a result. I have myself seen a case recently where a patient had made a wad of cotton fulfill all the offices of an obturator, and thus enlarge an opening of moderate size through

the roof of the mouth, until its boundaries were the alveolar ridge and the soft palate. The principal objection to the stud form, Fig. 2, is that it would prevent a final closing of the aperture from natural causes; experience having shown that in many cases where the aperture is only bridged over, healthy granulations form, and ultimately the gap is completely filled.

About fifty years subsequent to the publications of Paré appeared those of Jacques Guillemeau, but the instruments which he describes seem in no way to differ from those of his predecessor. He continues the use of the sponge, mounted in the same way, and also the stud button.

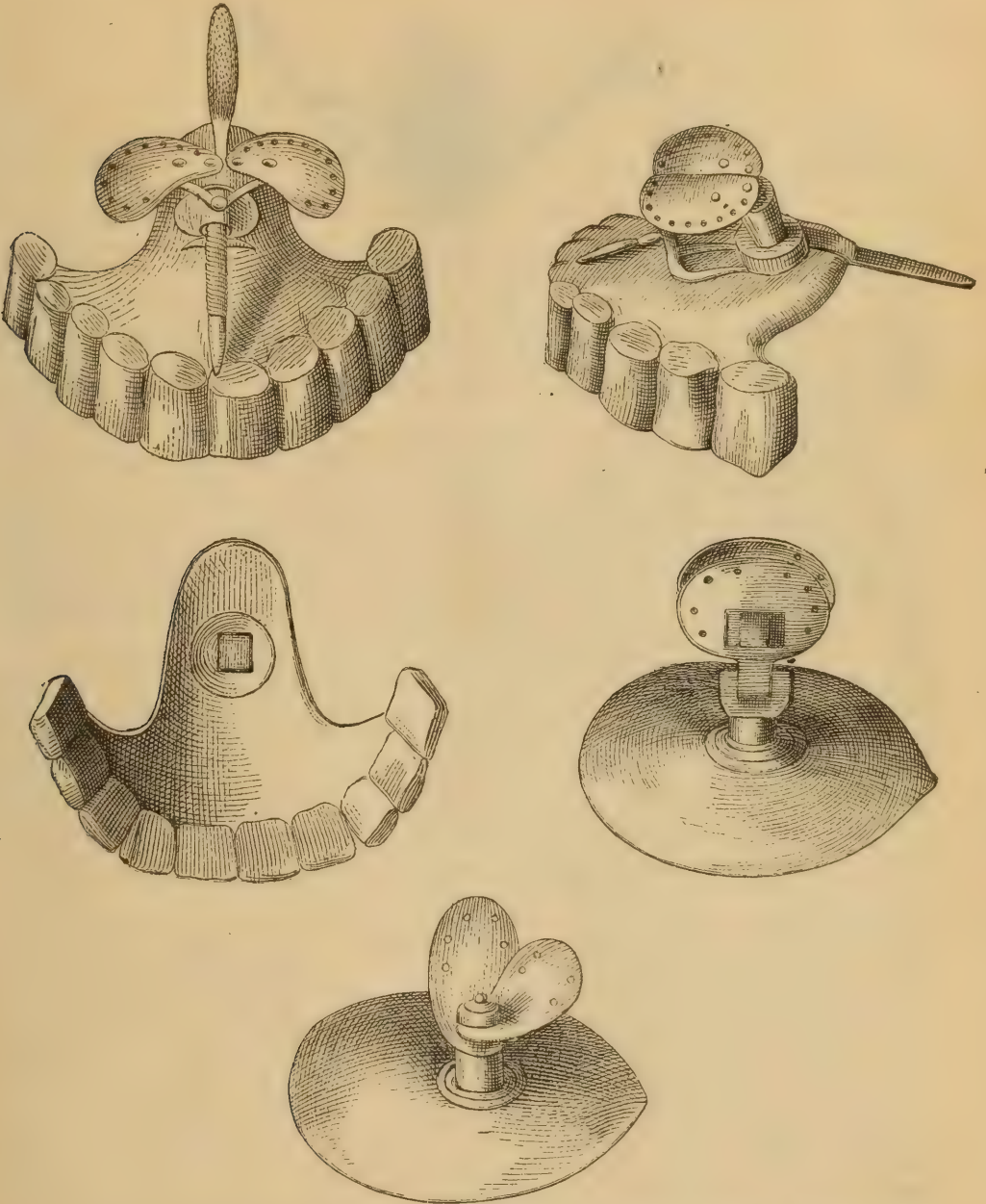
In 1756 Laurence Heister describes an obturator, but it is the concave disk of Paré, with but a slight change in the method of attaching the sponge. These two methods appear to have been the only ones adopted during a period of nearly two hundred years.

In 1728 "*Le Chirurgien Dentiste*," by Pierre Fauchard, was first published. Fauchard described and illustrated much more complicated mechanism for this purpose than anything which preceded him; nevertheless, the principle of support was much the same as his predecessors. He depended upon passing through the aperture and resting upon the superior surface of the surrounding border; but he can be readily pardoned such a course with such instruments as were complicated with artificial teeth in a mouth where there were no remaining natural teeth which would give support. As he seems to have been the first to construct such formidable apparatus, the ingenuity which he displayed in their contrivance entitles him to much credit. The plan which he adopted was that of a "concave convex plate to cover the fissure; to the centre of the convex surface he attached a tube, through which passed a screw, to the superior extremity of which were attached two wings; the inferior extremity terminated in the concave surface of the plate in a small head. The wings were folded together and passed through the fissure, and when the artificial palate was in its place, the screw-head was turned, and the wings were spread across the fissure, and rested on the nasal surface of the roof of the antrum of Highmore. These wings had each a small piece of sponge attached to their under surface, which readily adapted itself to the surface on which it rested, and thus the pressure of the wings on the tender mucous membrane could be tolerated."

Various appliances of his are illustrated on the following page.

No improvement was made upon Fauchard until Bourdet, who published a treatise in 1756, recognized the evils of wearing an instrument in the aperture, particularly the expanding sponge; and recommended

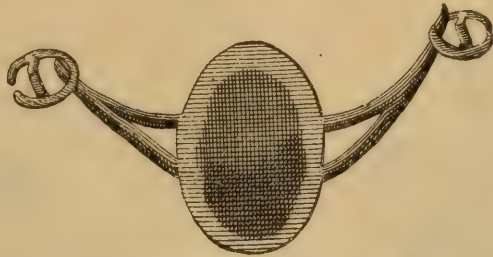
the arching over the vault of the palate by thin sheet metal, supported by attachment with silken ligatures to the teeth on either side, and thus not only prevent the enlargement of the orifice, but assist nature in the effort to reduce it.



Nothing of importance in the history of obturbators appears again until the advent of M. Delabarre, who published his treatise on Mechanical Dentistry in 1820. He adopted the ideas of M. Bourdet, and improved the instrument by substituting metallic bands about the teeth, after the

manner of the modern clasp, in place of the ligatures, for support. The ligature created an irritation of the gums which the clasps avoided.

The figure illustrates the improved obturator of Delabarre's.



The same author contrived another and somewhat formidable apparatus, which was an obturator and velum combined; but as the description of the instrument comes more properly under the head of artificial vela, the reader is referred to a subsequent article upon that subject for the details.

Up to this period we are indebted entirely to the French for the skill in this department, and for its record. All of the aforementioned authors were French; but since that period the art and the literature have passed entirely into the English language, with one notable exception—M. Preterre, of Paris—who has made a larger number of prostheses for the buccal cavity than any or all of his predecessors.

The first English author of any importance was Mr. Snell, who published a treatise in 1828. His obturators for perforation of the hard palate were adapted in recognition of the principle of simple juxtaposition as advanced by Bourdet; and as a proof of the correctness of the principle, he cites a case under his treatment where two apertures of considerable dimensions were covered, and ultimately contracted and closed entirely.

This pathological fact being now confirmed by fifty years of experience added to Snell's, determines the true principle upon which all obturators or simple perforations should be based. In the more complicated cases of accidental lesion, requiring an obturator and velum, Mr. Snell seems to have had considerable experience, and, from his own account, very marked success. The cases which he relates in his treatise are exceedingly interesting, and show a true perception of functions to be restored, and a scientific skill in the adjustment of apparatus which would put to shame some of the vaunted superiority of the present day.

His most ingenious appliances in which a velum was required were a marked improvement in simplicity over his predecessors, a detailed description of which will be found in a subsequent description of artificial vela.

*(To be continued.)*

## MECHANICAL DENTISTRY.

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By W. F. KELSEY.

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“The appropriate and inevitable decline of mechanical dentistry,” which affords such cause for congratulation to those who assume that dentistry should rank among the learned professions, appears rather a source of solicitude, both to those who desire to see ours, in the highest degree, a useful and honorable calling, and to that class which is compelled to apply to us for professional services. By claiming to be medical specialists, many high-minded men, who look only to the elevation of our profession from the grade of mechanics, have brought upon themselves the ridicule of the whole thinking portion of the medical fraternity.

Medicine may extend its hand to, and look with a patronizing air upon progressive dentistry, still it is not yet prepared to acknowledge fraternity with the younger profession, and we should modestly await its advances before compromising ourselves with the assumption of equality. Although we deal with organs rather than with organisms, the wonderful strides which dentistry has taken during the past generation give earnest of a future not foreseen by those who labored under the disadvantages and struggled against the prejudices of a century ago. Nor has this progress been confined exclusively to the operative department of dentistry. The invention of porcelain teeth; the use of metal in the construction of plates; the application of a continuous gum; and finally, the discovery of a substance which, with many of the advantages possessed by the more expensive materials, combined a cheapness and readiness of working that enabled the dentist to supply his poorest patients with a neat and serviceable substitute for the natural teeth, have formed an era in dentistry which will ever be looked upon with gratitude by all whom caries or accident deprive of these most useful organs.

In defending mechanical dentistry against the apathy which threatens it, the writer would by no means convey the impression that he considers this the more important branch of the profession. The highest province of dental art is to preserve the natural teeth, and when successful in what it undertakes, deserves the highest commendation of an enlightened age. Yet, notwithstanding all that has been achieved in this direction, and the dogmatic assertions that Nature intended that the

teeth should in every instance be retained during the entire life of the individual, we are confronted by the fact that it is a striking exception to meet a person past middle life with these organs in a state of perfect preservation. Whatever wonderful results may be attained in coming generations by feeding phosphates to the grandparents; inculcating habits of cleanliness in children from infancy; separating the teeth with improved disks, or performing the most perfect operations in the restoration of decayed teeth, it is at least doubtful whether dentistry will *ever* succeed in reversing this condition of things, while the practices of civilization remove from the food many of the elements most essential to the formation of the osseous tissues before placing it upon the table, then mix with it all manner of indigestible condiments, and finally transfer it to the stomach with neither regularity of hour nor regard to the proper time of eating, not to mention the violation of hygienic laws in matters of ventilation, open air exercise, and regular hours of sleep, the observance of which are so essential to perfect development of the bony in common with the other tissues of the body.

Until the habits of civilized life are greatly changed, this Utopia of perfect teeth will not be attained. The question then arises, Are the intelligent and skillful members of our profession to supply the necessities of their patients, or are the toothless unfortunates to be shunned like the contaminating Pariah and recommended to the charge of that "class of men who, ostensibly practicing dentistry, in inserting artificial substitutes, show neither taste, skill nor artistic ability"? Can we not render as commendable a service by supplying aged persons with the means of properly masticating their food, thereby lengthening and making happier the brief period which remains to them on earth, as by making "roots that were troublesome healthy and comfortable"?

That our representative men are slighting mechanical dentistry cannot be denied, nor is it unnatural that it should be so, as a variety of influences are in operation which tend to produce this result.

The most commendable of these is the desire to anticipate the necessity of resorting to artificial appliances, by preserving the natural teeth. Then, to attain the highest excellence in filling, it is necessary to be continually at work over the chair, and any interruptions, especially in the extraction of teeth, are likely to produce a tremulous nervousness which is fatal to the perfection of the operation. Again, the less cleanly operations in the laboratory are distasteful and not as remunerative as those in the office, while the continual improvements are calculated to still further cheapen the price of artificial work.

Although the introduction of cheap bases has lessened the demand for the more expensive materials, and reduced the profits of our more prosperous dentists, by placing a serviceable set of teeth within the means of thousands who would otherwise have been deprived of them, it has resulted in a public benefaction, and should be so considered by every one having the welfare of his fellow-man at heart.

But regarding the subject with mercenary eyes alone, the increased demand for dental services has rendered the aggregate of profit to the profession greater; and even if some unworthy persons are thus induced to embark in the calling, we are not compelled to acknowledge fraternity with such.

If the prices which could be demanded for artificial work have been reduced, at least a portion of the loss to the dentist has been a gain to the public, and, acknowledging the axiom of the greatest good to the greatest number, the benefits have overbalanced the evils resulting therefrom. For cheap—when cheap signifies poor—dentistry, the writer has no word of commendation, but believes that an appreciative public is always willing to properly compensate a skillful man, who fashions an artistic and useful substitute for the natural organs. Unfortunately, the greater portion of our dental literature is written by old-established practitioners, who can afford to banish mechanical dentistry from their offices, whilst their present position too frequently causes them to forget the financial argument against it which had such weight in the earlier years of their practice. Those same men, whose reputation enables them to command nearly any sum desired for their services, with apparently the utmost interest in the welfare of a younger man, will often advise him to place an equally high value upon his own operations; which advice, if followed, will inevitably result in the young aspirant having no operations to place a price upon.

It would probably be unjust to insinuate that the kindly advice is often prompted by the motive which actuated a certain well-known and influential dentist to remark, "If all can be induced to agree to a given schedule of prices, it will tend to draw the business into *our* offices." However, this article was not intended as an exhaustive treatise upon the relative importance of operative and mechanical dentistry, but was written in the hope that suggestions might be offered which would assist those desirous of learning how to obtain the best results in the latter department. But, owing to the length to which it has already attained, the suggestions will be reserved for a subsequent issue of the MISCELLANY.

## Decision against the Rubber Company, and in favor of Celluloid.

CIRCUIT COURT OF THE UNITED STATES, DISTRICT OF  
MASSACHUSETTS.

IN EQUITY.

No. 729a.

GOODYEAR DENTAL VULCANITE COMPANY

V.

CHARLES G. DAVIS.

SAME V. DEFENDANTS IN SIXTY-SEVEN OTHER CASES.

OPINION OF THE COURT.

SHEPLEY, J.

The patent and its reissues, granted for the invention of John A. Cummings of "an improvement in artificial gums and palates," or, as described in the claim, "the plate of hard rubber, or its equivalent, for holding artificial teeth, or teeth or gums substantially as described," have been the subject of extensive and prolonged litigation. Since the affirmance by the Supreme Court of the United States in *Smith, Appellant, v. Goodyear Dental Vulcanite Company*, 3 Otto, 486, of the decree of the Circuit Court in the test case of *Goodyear Dental Vulcanite Company v. Smith*, the validity of the reissued patent has been fully established. The decision of the Supreme Court in that case must be considered as final, not only as to the validity, but as to the construction of the patent, which was carefully considered in that case, both in the Circuit and the Appellate Court, as it had previously been in the Wetherbee and the Gardiner cases.

In *Vulcanite Company v. Smith*, in the First Circuit, this Court decided that the patent was not for a process or art, but for the new product resulting from the manipulation by the described new process, and for one of those products in which the process so inheres, that the de-

scribed product can only be made by the described process, and that the invention was one in which the process by which it is made is a part of the substance, the thing made, the manufacture. What the new product was, and wherein the novelty consisted in the process, we shall hereafter have occasion to consider. In the opinion (by Mr. Justice Strong) in the Supreme Court in the same case, the invention patented is thus described: "The invention, then, is a product or manufacture made in a defined manner. *It is not a product alone separated from the process by which it is created.* The claim refers in terms to the antecedent description, without which it cannot be understood. The process detailed is thereby made as much a part of the invention as are the materials of which the product is composed."

If the defendants, by practicing the process described by Cummings, using the materials described by him, or such materials as are equivalents, and were known equivalents at the date of his invention, in the described process, or such as, in the process, are mere substitutes of one material for another, without any change in the process or in the effect, have produced a product the equivalent of his in the described properties, and for the described functions, then, and only then, have they infringed.

The product, the new article of manufacture patented, was a set of artificial teeth, consisting of a plate of hard rubber or vulcanite, with teeth or teeth and gums secured thereto in the manner described in the patent, by imbedding the teeth and pins in the vulcanizable compound, so that it shall surround the teeth and pins while the compound is in a soft state before it is vulcanized, so that, when the compound is vulcanized, the teeth are firmly secured by the pins imbedded in the vulcanite, and there is a tight joint between the vulcanite and the teeth. This product was a new product, not alone because it substituted one material for another, the material, vulcanite, rigid enough for purposes of mastication, yet pliable enough to yield a little to the mouth, and at the same time light and inexpensive, in place of the hard, unyielding, expensive and heavy metals previously used, but also in the additional fact that it was made by a process which, taken as a whole, was a new process, by the use of which process "the teeth can easily be baked into the gums, which form one piece with the plate."

The next question to be considered is, what was there new in the described process. The whole process of forming and making a set or case of teeth, including the plate, gums and teeth, is fully described in the Cummings patent, and this process is so fully described in the case

of *Vulcanite Company v. Smith*, that it becomes unnecessary to repeat it here. It is sufficient to state that in view of the state of the art there was nothing substantially new in that process until we reach this part of the description: "The teeth are provided with pins projecting therefrom in such manner that the rubber which is to constitute the plate will close around them, and by means of them hold or secure the teeth permanently in position. The plaster mould, with the teeth adhering therein, as just described, is now filled with soft rubber, a little at a time, pressed in with the finger, or in any other convenient way; and care is to be taken that the rubber is made to completely fit into the cavities, and around the protuberances, including the pins, and is filled in to the thickness or depth desired to form the plate. I then lock the rubber plate in position by shutting the other half of the plaster mould over it, to insure its retaining its exact form while warming, and then heat or bake it in an oven, or in any other suitable way. The soft rubber or gum, so inserted in the mould, is to be compounded with sulphur, rubber, etc., in the manner prescribed in the patent of Nelson Goodyear, dated May 6th, A. D. 1851, for making hard rubber, and is to be subjected to sufficient heat to vulcanize or harden it, substantially as directed in that patent. It is also to be colored in imitation of the natural gums, by mixing it with vermilion, or other suitable coloring matter, while in the soft state. After the plate has been heated sufficiently to harden it or convert it into hard rubber or 'vulcanite,' so called, the mould is removed, and the plate is polished ready for use."

It will thus be seen that an essential element of the described product is "a plate of hard rubber or vulcanite," in which the teeth are imbedded, and an essential ingredient in the described process is the soft rubber or gum, compounded with sulphur, rubber, etc., in the manner prescribed in the patent of Nelson Goodyear, for making hard rubber, and that an essential step in the described process is the subjecting the compound of soft rubber or gum with sulphur "to sufficient heat to vulcanize or harden it, substantially as described in that patent" (*i. e.*, the patent of Nelson Goodyear, of May 6th, A. D. 1851).

The equivalent of that product thus made by that process must therefore contain the equivalent of the plate of hard rubber made and manipulated by a process equivalent to the described process of compounding a gum with sulphur, and applying it and moulding it and incorporating it with the teeth and gums, when in a soft state, and then subjecting it to heat, to harden and vulcanize it in the manner described in the Goodyear patent, or in some equivalent manner, or by some equivalent process.

The defendants use, in making their set of artificial teeth, a plate made of "celluloid," substantially a new material, discovered and patented since the date of the Cummings invention. This substance is compounded of cellulose, or vegetable fibre and camphor. No rubber or other equivalent gum, and no sulphur or equivalent for sulphur in the process, enter into its ingredients. It is not a vulcanizable compound, and contains no vulcanizing agents in its composition. The camphor in its composition, instead of being a vulcanizing agent, causes the composition to soften instead of harden under the influence of heat. The product, when compounded, and before being subjected to heat, is not soft, like soft rubber under like conditions, but hard. In the manipulation of this material, the process of making a set of teeth, composed of the plate and teeth and gums, is an entirely different process from the process described in the Cummings patent, when compared with that part of the Cummings process which was new in the state of art, and the novelty of which part gave to the Cummings process, when considered as a whole, the ingredient of novelty and patentability. It is not placed in the mould in a soft, plastic condition, "a little at a time, pressed in with the finger, or in any other convenient way," but in a hard, rigid condition, like horn or bone or ivory. It is then subjected to heat, not to vulcanize or harden, but to soften it. It afterwards, on being cooled or restored to its original temperature, returns to its original condition as a hard substance, as when first placed in the mould. No vulcanizing process, or even process of hardening by heat, and no equivalent for any such process, is practiced. In the light of these comparisons, it appears evident to the Court that the use of celluloid in the manufacture of sets of artificial teeth, as practiced by the defendants, and the manufacture itself, the set or plate of teeth, differ as much, both as to process and product, from the process and product described and claimed in the Cummings patent, as that process and that product differed from those previous manufactures which existed before the Cummings invention, and were unsuccessfully relied upon as anticipating it.

It is true that this construction of the Dental Vulcanite Patent narrows the scope of the patent. It is urged, with much force, that if this be the true construction, it would follow that if an inventor invented at the same time a new process and a new product, he would by such a construction of his patent lose the benefit of it, unless the infringer used his process or an equivalent one to produce his product or an equivalent one. One answer to this objection is, that in the case supposed, the inventor might patent both the new process and the new product,

and thus fully protect himself. In its application to this case, it is believed that the objection is without force, for the reason that such a construction of the claim of this patent is the only one which makes the claim a valid claim. To abandon the construction which makes the product patented the new manufacture, when made by the described process, is to abandon that which gives it its vitality. It is better to adopt that construction, which, although limiting the scope of the claim, secures to the inventor all that he actually invented and no more, than to adopt one which would render the patent invalid, or one which, being broader than the invention of the patentee, should be a barrier in the way of future progress in discovery and invention.

Bill dismissed.

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EXTRACT FROM THE ADDRESS OF PROF. T. C. STELL-  
WAGEN, M.D., D.D.S.,

BEFORE THE LAST GRADUATING CLASS OF THE PHILADELPHIA DENTAL  
COLLEGE.

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You, gentlemen, have enrolled yourselves among the votaries of science.

The preparations for such struggles as men of this era are called upon to make are of the most thorough and complete nature; for to-day eminence in any undertaking demands the highest skill, entire devotion, and perfect mental training, together with intelligence of the very highest order.

This march of improvement, like all permanent works, has been gradual; and in our profession may be said to have commenced at comparatively a recent date—1840—when the first dental college was established. The growth in importance of such institutions may be inferred from the fact that at that time there was but one in the whole world. This comprised four professors, and had in 1841 two graduates. On the 1st of January, 1877, in the United States, we had 11 schools, with 116 professors and demonstrators, having 484 students who have availed themselves of the advantages afforded at these centres. Prior to the establishment of these there was but one means of obtaining information, through private tuition, and that must have been obviously defective, or there would not have followed the growth and encouragement of later and more improved methods of focalizing a number of men, all alike inter-

ested in imparting freely what they have already learned, and adding to their own store by hearing the experience and witnessing the operations of others.

To you who pass out from the walls of your Alma Mater to-night, we would say, we can assure you of the severity of the scrutiny to which you have been subjected, and while congratulating your successful passing of the ordeal, we can likewise remind you of opportunities such as never before were seen, of having been in intimate hourly association with a class of nearly half as many more as ever before have been attracted to one dental school—indeed, over 43 per cent. of all that on the first of this year attended other dental colleges in this country. From the 17,184 operations performed by your clinical instructors and fellow-students, you have had facilities in one afternoon or morning to witness more than many private students have during the whole of their terms of tuition, to say nothing of the course of lectures which mainly endeavored to discharge the task of systematizing this knowledge, to which likewise you have attentively listened. Many of you have, for two years or more, had this rare opportunity from five to six days every week, which more than outstrips that of the whole life-times of many successful practitioners.

From this time the Philadelphia Dental College has determined to demand of all candidates for graduation the previous attendance upon two full courses. In this there must be admitted to be two good and sufficient reasons, when it is considered that it no longer encourages men to gain their early experience by five years of more or less imperfect practice upon their patients, and as it no longer allows or admits of the unequal footing, which such extended clinical practice as the college is capable of affording, being compared to an ordinary one of five years. Indeed, those who have been self-educated and afterwards attended this course, bear testimony to its comparative economy, both in time and money, over any other as yet known. Let no one, then, say that although you may be young in years, you are without intelligence or experience. To be young is to have the world before you, and to be armed with such trained minds, stored with practical and theoretical knowledge, is to have the boon preferred by the great Solomon, to whom God granted the right to select between wealth, wisdom and honor.

The great object of life is to so economize our resources as to be of the most service to our fellows, and ever humbly improve the gifts or loans that have been entrusted by the Creator to our hands, or to express it most perfectly, "Love thy neighbor as thyself, and the Lord thy God with all thy heart." To do this, then, is to obey and work with such

best preparation as can be obtained. Procrastinate not in the vain hope of being better prepared at some future time. More good men fall into this pit than at first might be supposed; but it allures some of the best, by simple dread of false work, or being opened to the unfriendly criticisms of their associates. What would have been accomplished in microscopy had Leuwenhack been persuaded to abandon his home-made and defective instrument? Or who would have discovered America, if the Northmen had awaited the construction of a Great Eastern, or Columbus for the command of the Armada? Had the founders of the Philadelphia Dental College, with whom I had no share in the work nor in the honor, awaited a more auspicious time than the year 1863, it is pretty safe to infer the institution might be among the things of the future instead of numbering 993 students and 453 graduates, of whom sixteen have had positions as professors or teachers in our own or other colleges, and three as editors of dental journals, independent of the very great number who might be included in the above from their relations as preceptors to private students.

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### A REMARKABLE CASE.

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From the Dental Register.

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By G. R. THOMAS, D.D.S.

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In the February number of the REGISTER of this year, an article appears by J. Clark Scott, D.D.S., entitled, "A Strange Case," and asks, "Is there a parallel?"

At the close of his article he refers to a case in Detroit which came under my observation, and was of so much interest that I feel it my duty to report it, especially since Dr. Clark asks for a parallel.

On the 20th of April, 1876, Mrs. T——, of Detroit, called to consult me in relation to a trouble she was then having with her jaw, which, upon examination, presented a case of incomplete ankylosis of the inferior maxilla. The history of the case thus far, in brief, was that about five weeks previous, a dentist of this city was called upon to extract the right inferior *dens sapientia*. The patient was a lady about twenty years of age, with all her teeth in position. This tooth was already erupted, but for lack of room was causing so much disturbance that it was thought best to remove it. Extraction was attempted by

pushing an elevator between it and the second molar, using the latter for a fulcrum. The effect was supposed to be successful, but upon searching for the missing tooth it could not be found. She was induced to a partial belief that she had swallowed it. One thing was certain, it had disappeared from its socket. The muscles began to contract at once; the jaw gradually became set, and much pain and suffering was the result for five weeks, during which time she was receiving treatment from her physician.

After giving the case a careful diagnosis, she was dismissed, without prescribing, with instruction to come again the next day, during which time I called upon the dentist who had been employed, who gave substantially the same statement of the case as the patient had. I said to him, such being the facts, I should refer her back to him when she should come to my office next day. He said, "No. If you can cure her, go on and do it." He said she had swallowed the tooth, he had no doubt of it. I commenced the treatment with that view of the case. All the nourishment she could receive was in a liquid form, she not being able to open her teeth more than one-eighth of an inch. I immediately commenced the treatment, using gentle force to open the jaws, and gave her a small wooden wedge with notches cut in its surface for her to use at intervals, at the same time using an ointment containing potassæ nitras for external use, and put her upon potassæ bromide. This treatment was continued for about six weeks, with only partial success as a result, she being able to open her mouth without help only about one inch. All this time there kept up a light watery fluid discharge from the socket of the missing tooth. The second molar became loose, and I extracted it. Becoming convinced of the presence of necrosed bone at or near the angle of the jaw, I called in Dr. Thomas A. McGraw, one of our best surgeons, and his diagnosis coincided with my own.

It was then decided that an operation would be necessary, and she was placed under an anæsthetic, the mucous membrane thoroughly cut away, and the outer portion of the alveolar process was found badly necrosed and cut away. In passing in the fingers to make certain that all the necrosed bone had been cut away, I discovered, the length of the index finger distant, a little in and upward, what appeared to be a loose piece of bone. And this was the first time that I had any idea of the presence of that missing tooth. We were not long in deciding that it must come away, whatever it was. We had no instruments that would reach it, and, strange as it may appear, I did the very thing, without any knowledge of its ever having been done before, that Dr. Scott reports having done the year before, stepped into my laboratory, turned up a

rude hooked shaped instrument, and was soon rewarded by having the "swallowed *dens sapientia*" in my possession, that I now fished out with the said instrument.

It had doubtless been driven by the elevator up and back underneath the mucous membrane, and finally found lodgment between the internal pterygoid muscle and the jaw, where it was finally anchored. The patient commenced to recover at once, and in three months from the date of the operation was considered well, although there was at that time some considerable tenderness about the parts involved.

This is the second case that I know of, on record or otherwise, and I hope never to know of another. No person can get any idea of the real suffering induced by such a case, without having seen it in its various stages. I understand a law-suit was the result of the case reported by Dr. Scott, the result of which I have not learned.

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## EXTRACTS FROM AN ARTICLE ON POPULAR DENTISTRY.

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Prepared by G. F. J. COLBURN, D.D.S., for the Methodist Quarterly Review.

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### CHILDREN'S TEETH—HOW TO BE TREATED.

The same care and attention required for the preservation of the permanent teeth is necessary for the deciduous teeth. Nature never intended that the teeth of children should be lost or removed by decay, but that they should remain to fulfill their offices until she should hang out her signal for their removal by causing them to become loose, and give way for the permanent ones by the absorption of their roots. If nature had her course, we should seldom witness a case of irregular or deformed teeth or mouth, now so common. The principal reason of this deformity is, that some of the temporary teeth have been removed, on account of pain and decay, before their time, in consequence of which the space that nature had reserved for a permanent tooth becomes so contracted that when it does appear it is crowded from its position, and is either left thus crowded (in which case it is not only unsightly, but tends to destroy the symmetry that nature intended), or a sound tooth has to be sacrificed to make room for it. Scarcely a week passes that the dentist is not called upon to correct some such irregularity. Children have twenty temporary or deciduous teeth, the germs of which, as well as of

the permanent, exist in the jaw even previous to birth, and begin making their appearance about the sixth or seventh month, although the time varies in different children. The period of the eruption of these teeth is the most dangerous and troublesome of the child's existence, and every parent would do well to consult a competent dentist, who will, by proper remedies, palliate the disorders incidental to this period. About the second or third year the temporary teeth are complete and are fully developed, and require the same care to preserve them, both for usefulness and beauty, as is exercised toward the permanent set. All parents should be impressed with the importance of this fact; as they value the health, comfort, and beauty of their offspring. Protect the first set of teeth from the spoiler. Rather let the face or hands of your child remain unwashed than allow him to suffer from unclean or decayed teeth. Early initiate the child into the mysteries of the dental toilet by teaching him to use powder and brush, and that it is necessary that the mouth should be clean to eat his morning meal. Have the toothpick (an instrument more requisite at times than the brush for healthy teeth) brought into requisition after eating, so as to remove all particles of food that remain lodged between the teeth. Many a child would be saved from a great amount of suffering, and the parents spared a great amount of trouble, if these rules were obeyed.

#### IMPORTANCE OF EARLY ATTENTION TO THE TEETH AS TO PERSONAL APPEARANCE.

About the sixth year, or soon after, four permanent molar, or double teeth, make their appearance. Let every parent remember this. It is generally supposed that these four teeth belong to the first set, and that if they decay and are removed, they will come again. This is a mistaken idea. They are permanent teeth, and if lost, will be lost forever. No teeth that come after the sixth year are ever shed. At twelve years the second set is usually complete, with the exception of the *dens sapientie*, or wisdom teeth, which make their appearance from the eighteenth to the twenty-fourth year. During the eruption of the second set, the beauty and character of the child's countenance is completed, and everything depends upon proper care and attention at this time, to see that the teeth come with regularity, and without being crowded. Should this be the case, the parent may expect a finely-formed mouth; and not, as we often see, a rabbit-narrowness of the mouth and projecting chin, etc., contracting the lips and altering the whole expression of the face.

CONSEQUENCES OF EARLY NEGLECT OF THE TEETH UPON THE VOICE OF  
ADULTS.

Another very important reason why the teeth should, early in life, receive the utmost care and professional attention, is the effect they exert upon the articulation. The loss of a single tooth affects the utterance, and invariably produces a hissing or lisping sound in articulating certain words containing the dental vowels, such as *t*, *d*, *s*, *g*, and *j*. All public speakers, especially lawyers, clergymen, and others, should, as they value a correct enunciation and articulation, remember that the teeth were placed by nature to form a certain arch for the express purpose of giving force and purity of utterance. The modulation of the voice also is, in a great measure, dependent upon the shape of the mouth and healthy condition of the teeth and their contiguous parts. Dr. Hill, in his valuable and interesting paper on the "Teeth and Voice," says that "the experience and observation of every thinking man may be called to our aid in support of this position; for it cannot have escaped them that many individuals of profound intellect and brilliant parts make but a sorry figure in their fruitless attempts at oratory and elocution. Every one who has had experience in regard to matters of this kind must have been conscious of great disappointment in not realizing his expectations in regard to certain distinguished men with whose writings he has been long familiar. Having fancied to himself that because they could wield a pen so successfully, they must, therefore, be accomplished speakers, and finding himself sadly mistaken, he is at a loss to account for a circumstance so strange and apparently contradictory. But where lies the difficulty? Certainly not on the score of intellect, for their acquirements are demonstrable from their writings; nor is it because they have never enjoyed the advantages of tuition where elocution was taught. What, then, is the obstacle? We answer, it is to be found in the peculiar conformation of the mouth and the wretched condition of the teeth, giving rise to impediments and difficulties which constitute their misfortune, and of which they are most painfully conscious. Let any one visit a dentist's laboratory and view the casts of different mouths, and he will readily see one reason why people have voices and articulation so various and unlike each other. Some casts represent a mouth not unlike a squirrel's—very narrow and contracted, the upper jaw projecting far over the under, giving a squeaking, effeminate intonation to the voice. Such a shaped mouth is incapable of producing perfect language. We have in our possession two such casts, having the appearance of

having been pressed together in a vise. The possessors of these mouths never actually talked, but rather squeaked. No amount of learning or talent, or study of elocution, could ever enable the possessor of such a mouth to become an orator. The whole cause of such deformity was owing to the neglect of the parents while the teeth were being shed. Had a dentist been consulted, the crowded condition of the teeth could have been remedied. There were too many for the space to be occupied, so they became irregular, pressing each other, and thereby deforming the mouth. The above case of deformity is but one in thousands that could be related. But even allowing that all due care has been exercised to preserve the symmetry of the dental arch, by having at the proper time the teeth removed, so that there is no crowding or malformation, still, unless the teeth are preserved from decay by proper attention to their health, there will be a difficulty of articulation and enunciation.

Dr. Hill relates a case that occurred in his own practice. "The Rev. Mr. S. was deeply afflicted with a diseased tooth, situated on the right side of the upper jaw. He called at our office for relief. We advised extraction, and it was removed. On the following Sabbath, while engaged in the performance of divine service, he became so annoyed by the loss of that tooth, and so difficult was his enunciation, that he was compelled to stop in the midst of his discourse, and to explain the cause of his difficulty to his congregation. And this from the loss of a single tooth." If such a case of inconvenience arises from the loss of a single tooth, what must be the effect where, from neglect, almost all are lost? A clergyman not long since called upon us to have some slight operation performed, who had, by inattention and neglect, allowed tartar to collect and remain around his teeth, so that his breath was not only very offensive, but a number of his teeth were lost from this cause, and others were loose. Such was the condition of his mouth that when he spoke in the pulpit a hissing sound was audible throughout the church. The teeth cannot have too much room. If they were a little separated, they would be less liable to decay. Such men as Henry Clay, Daniel Webster, Patrick Henry, and others, had broad, well-formed mouths. It behooves every one, especially public speakers, to seek to remedy, as far as possible, any deformity that may arise from the loss of the teeth. In a great measure this may be effected by artificial substitutes. In this age of Dentistry there is no deformity or loss that cannot be readily remedied and supplied by the competent dental surgeon in such a manner that, after a little practice, the artificial teeth may be said to make up the deficiency occasioned by the loss of the natural, and fulfill, to a wonderful degree, all purposes of mastication, articulation, and beauty.

## REST AS A THERAPEUTIC AGENT.

Dr. S. Weir Mitchell, in the course of an oration before the Medical and Chirurgical Faculty of Maryland in April last, made the following interesting suggestions regarding the treatment of a most troublesome class of cases :

“ But if it is easy to fatten and redden some people, we know, also, that it is hard to compass this in others. In our great cities there exist a host of influences for evil which result in all classes, and especially in women, in the gradual creation of patients who, having lost weight and become anæmic, find it hard to regain that competency of capital in fat and blood without which the business of life is carried on at a dangerous cost. We search in vain in these cases for organic changes which may explain their condition. No function is well performed ; but it is useless to correct digestion, or to treat an ulcerated womb, or order exercise. The blood is lacking to aid in the little gains we win, and exercise is valueless or worse when it exhausts tissues which lack the means of being rebuilt.

“ I need not dwell on points so obvious to educated physicians. For many years past I have had my thoughts directed to this subject, and, like every one here, I have gone on month after month treating such cases with no better, and, I hope, no worse fortune than has fallen to others. A moment of happy thought, and much reflection since, led me to a method of treating, which has rewarded me over and over with success so brilliant that, as the plan of cure involves the use of those extreme measures of which I have been speaking, I may be pardoned for calling them to your attention.

“ And perhaps also the path by which I reached my conclusions may not lack interest.

“ Some years ago I saw a woman, who was, like half a dozen any of you can now recall—a pallid, feeble creature, who had menstruated irregularly until two years before, and then stopped at the age of thirty. She was the type of a class. Everything wearied her—to walk, to read, to drive, to sew. She was the woman with a back, and a shawl on her shoulders, and a sofa for a home, and hysterics for diversion. She had tired out the doctors and exhausted drug-shops and spas and travel, and outlived a nurse or two. The deformity-man had found a spinal curvature, and put on a brace ; the gynæcologist had had his turn ; the quacks had had their share ; and she wore blue glasses to keep out the

blessing of daylight. She was five feet four, and weighed ninety-four pounds, and had as much figure as a hat-rack, and had no more bosom than the average chicken of the boarding-house table. Nature had wisely prohibited this being from increasing her breed. How many of you have stood helpless before this woman! Like you, I had had my failures with such cases, and I was driven to reflect as to what new device I could try. Because everything tired her I put her at rest in bed. I made rest despotic, absolute. Then I fed her with milk at brief intervals. But in a few days my plan failed. Rest she took well enough, but attempts to feed resulted in sick stomach and diarrhoea, and new loathing for food. Then I said I must find some way to give exercise without exertion. I had seen in Europe how much use was made of systematic massage or kneading of the muscles. I knew that under its use the feeble limbs of ataxics strengthen for a time, so that hopeful friends even dream of a cure; and I was aware that it improved the local blood-circulation in a remarkable way, and gave to feeble and flabby tissues increase of tone and firm plumpness. It seemed to me that it could take the place of exercise for persons at rest.

“I had also in electricity another means of causing muscles to contract without the action of will or the exhausting use of nerve-force.

“For the first time, then, I used on a woman at rest thorough massage and the abrupt muscle-stirring of an inductive current.

“To my great pleasure, I found in a few days a return of appetite. But is kneading of muscles a mere fetish also? What scientific test have we of its activity? One, and a sure one, which I have lately found. In weakly people, despite the exposure to the air it involves, this process raises the general temperature  $\frac{1}{2}^{\circ}$  to  $1\frac{1}{2}^{\circ}$  Fahr. And, as I discovered this winter, to my surprise and pleasure, an induction current, either localized or merely allowed to pass to and fro from neck to feet, does precisely the same. They effect tissue metamorphosis for the patient in tissues little used in bed.

“I have employed every degree of rest; but in this woman's case, as usually, I permitted no exertion which could be avoided, and I carried it to such an extreme as to have the patient fed by hand, because it is tiresome while recumbent to use the arms, and because I have found that human beings, like turkeys, can be made to eat more when fed by another agent.

“To this treatment in a few days may be added raw soup and butter, and meat extracts, and iron in large doses.

“I fed this woman, with growing surprise at her power to digest as

she reddened and fattened. And how did she fatten and redden? The nails became pink; the veins began to show in the limbs. At first, as always, the extremities became cold under massage, then they grew warm, and at last, when she was well, the massage no longer elevated her temperature. And this is the rule. And as to fat, it comes first on the face and neck, and then on the back and belly, and last on the limbs.

“By absolute rest, massage, and induction-currents, you acquire power to over-feed, and the tissues are enabled to reclothe themselves with fat, and, what is better, you can thus refill the blood-vessels. This woman came to me thin, sallow, ugly and feeble. I sent her home fat and well, and vigorous and handsome, and menstruating steadily; and then nature relented and gave her a baby.

“This treatment has been to me a new light. I use it now without fear or hesitation, and think that I have learned at last how to recreate the blood and how to fatten. I have quoted one real case, my first. But this is no place nor occasion to relate cases, or to enter into details, as I shall elsewhere; but I may venture again to say a word as to two facts, even at the risk of being minute. During the treatment slight hemorrhages from the nose are not uncommon, but the return of regular menstruation is a better test of the rapid gain in blood. It nearly always becomes regular, and in three cases has returned during the first month of treatment, after absence, respectively, of three, five and eight years.

“The gain of fat is sometimes at the rate of one-half pound a day. I have seen it reach three-fourths of a pound a day; but these rates are rare.

“The applications of this treatment are many. I have used it in numbers of cases, selecting at first such as had no hopeless organic disease. I have also used it to prepare feeble people for surgical operations, and within a year I have ventured to treat in this peculiar way people in the early stages of pulmonary phthisis. I have seen as to these some notable facts, and have learned that in some such cases rest and over-feeding are of true curative value; for this is one of the doctor's best lessons, that there may be one way or several to a cure. In the early stages of phthisis we have all come to think air and exercise and out-door life the one thing needful or hopeful, and I may be thought insane to propose to treat such cases by rest and excessive feeding; but I promised at the outset to give you personal and practical experiences, and this is one, and now and then I have seen it do good service.”

## DEGREES IN DENTAL SURGERY.

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From the Monthly Review of Dental Surgery—London.

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TO THE EDITORS OF THE "MONTHLY REVIEW OF DENTAL SURGERY."

*Harvard University.*

MESSRS. EDITORS : A specimen letter, "one of many" I have usually burnt without answering them, but, as there can be no confidence in such an insulting epistle, I have thought that a little publicity might be of use in the matter. The letter is at your disposal.

Yours, &c.,

THOS. H. CHANDLER, *Dean H.D.S.*

*Birmingham, England, May 28th, 1877.*

DEAR SIR : I am anxious to obtain a degree in Dental Surgery, but it would be quite impossible for me to come to America for the purpose. Will you kindly inform me whether your faculty would be willing to confer the D.M.D. either *honoris causu* or *ad eunden* ?

I am, dear sir, very truly yours,

L—— T. C. P——, M.A.PH.D., LL.D., *Surgeon Dentist.*

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TO THE EDITOR OF THE "MONTHLY REVIEW OF DENTAL SURGERY."

SIR : The following announcement appears in the advertising pages of *Plain Talk*, a magazine circulating extensively among the Baptist denomination in Liverpool :

PAINLESS DENTISTRY.—Mr. —, L.D.S., R.C.S. (or London), Dental Diploma, Royal College of Surgeons, Surgical and Mechanical Dentist, — Street, Liverpool. Mr. — supplies Artificial Teeth, from a single tooth to a complete set, on the most moderate terms consistent with purity of material and durability in wear. Also the highest class work on platina and 18-carat gold plate. Perfect mastication and articulation secured with ease and comfort in wear. All the latest improvements, both English and American, including the suction plates. Painless extraction with nitrous oxide gas, at a very moderate fee. Stoppings in gold foil, gold amalgams, and white enamel. Misfits remodeled and adapted with comfort to the mouth. Those requiring the services of a qualified Dentist are invited to send for Mr. —'s "Treatise on the Teeth and Painless Dentistry," which will be forwarded gratis. All charges strictly moderate, and satisfaction guaranteed. Consultations and all information free. 95 Mount Pleasant, opposite Rodney street, Liverpool.

A similar one is to be found on the outside of the cover of the *Liverpool and District Congregational Magazine* for the month of August.

Of course no one "*will believe that this is the work of the gentleman whose name is made use of, but rather an unauthorized proceeding on the part of some advertising tradesman.*"

Yours, &c.,

AN ADMIRER OF PHILANTHROPY.

## É TUDE SUR LA GREFFE DENTAIRE.

Par Le Docteur TH. DAVID.

Most dentists are more or less interested in the subject of transplanting teeth—some especially, others only in a general way. To both classes the paper herewith presented, from the French of Le Docteur Th. David, will be valuable. It is a carefully prepared statement of the subject as it exists at the present day, and cannot fail of drawing the attention of dentists to a class of operations but little understood theoretically, and to a limited degree only adopted in general practice.

With Le Docteur Th. David we are not personally acquainted. His preceptor, M. le Dr. Magitot, is, however, well and favorably known, on this side of the Atlantic, to many. To us it seems he has good reason to be well pleased with his promising pupil.

The paper opens up a wide field of thought and inquiry, and it is to be hoped that the readers of the MISCELLANY will make good use of the opportunity to extend their thoughts as well as their practice in the direction pointed out.

This paper was originally translated for private use only, and the MISCELLANY is indebted to the kindness of Geo. S. Allan, D.D.S., of New York, for the opportunity of publishing it. This is done without any expression of opinion for or against the views advanced by its author.

The translation was made by a young lady, who, unfortunately, desires to preserve her incognito. So we can only accept the favor from her hands with many thanks, and congratulate her on having succeeded so well with so dry and technical a subject.

ED. MISCELLANY.

### INTRODUCTION.

In the course of our studies with our preceptor, Dr. Magitot, we have endeavored to profit by what we have heard and seen in so excellent a

school. It was then quite natural that on the occasion of our inaugural thesis, our attention should be given to the questions which have been raised in the course of these special studies. Truth to tell, our only difficulty has been in choosing from the numerous topics of thought of this practice, which is usually so little known among physicians. Still, having co-operated many times in a series of reimplantings of teeth, which had great success, our attention was particularly drawn to that side.

This operation, following certain special indications and having specific methods, is, as we shall see, nothing but a kind of ingrafting happily applied to surgical *therapeutics*. Such a subject cannot but attract us. The many facts which we have witnessed have seemed to us all the more interesting, because this ingrafting, which was advocated of old by certain specialists, is to-day regarded by many physicians as impossible and not to be realized. So it has seemed a point of interest to us to search into the facts on this subject, the truth of which the actual state of science permits us to establish.

But there is a still greater attraction which pertains to this subject. The study of it will enable us to furnish new resources to the conservative surgery of which we are, and always shall be, zealous partisans. So may the present limits to the cure of dental affections be extended. In our opinion extraction should now be practiced only in very rare cases, and following indications which some day we shall define precisely. In spite of all the attractions which such a subject possesses for us, we submit a most incomplete work to the approbation of our judges.

Time has unfortunately been lacking us, and this is more a *plan* of study than a real study which we have made of engrafting. We intend ultimately to complete our task.

However this may be, here is the summary of this plan.

In the first chapter we shall give the definition and an idea of animal engrafting in general, and of dental engrafting in particular. Then we shall establish its reality and possibility, by bringing forward several examples which we have borrowed from different authors, giving the result of the experiments.

In the second chapter we shall explain the anatomy and the pathological physiology of the engrafting, that is to say, the organic phenomena which determine the success of the operation.

And the third chapter shall be devoted to a study of the different kinds of dental engrafting, considered primarily in point of their application.

But before beginning our work we should fail in our duty if we did

not emphatically express our gratitude to our instructor, Mr. Magitot, for his kindness in teaching us, and for the excellent advice with which he has honored us.

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*Definition. History. Proofs.*

CHAPTER I.

§I. *Definition and History.*

“There is engrafting,” says Mr. P. Bert, (1) “whenever a portion separated from the body of an animal is replaced in such a way that it continues to live as if its nourishing relations had never been interrupted. What particularly characterizes it is the isolation pertaining to the separated part, being deprived of the vascular bonds which brought it its nourishment, reduced to its own resources, and condemned to death if this isolation last too long. Afterwards, there are the conditions of life reformed, the connections re-established, the nutritive functions once more acquired, and life, which was for a moment imperiled, henceforth assured.

The engrafted portion must become an inherent part of the individual, follow the destiny and participate in the same physiological evolutions and habits as the part cut away when it was healthy.

The origin of animal engrafting must certainly be very ancient. “It seems natural enough,” says Mr. Armaignac (Thesis of Paris, 1876), “to think that the idea must have come to the first individual who saw a part of his body violently cut off. This is true especially in regard to engrafting of the teeth, which are more liable to be isolated from their place either by *traumatismes* or extraction than any other part of the body. And we will observe that dental engrafting must certainly have existed before the time when it appears in medical literature. The first examples of successfully practiced engrafting come to us from India, where the priests and physicians have practiced *rhinoplasty*, for ages. Dental engrafting, according to some authors, would go back only to the eleventh century, when Albucaris makes mention of transplanting. But it seems to us that Hippocrates himself was not ignorant of it, for, concerning fractures of the inferior maxillaries, he advises that the teeth should be put back in their places and kept there with threads of gold, adding that with the help of these they will reunite.

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(1) Thesis on animal engrafting. Paris. 1863.

According to a statistic, carefully prepared by Mr. Béranger Féraud (Hospital Gazette, Paris, 1870), the number of known cases of successful engrafting were, in 1870, two hundred and twenty-four. But in this enumeration the dental engrafting is not included; it would, at that epoch, have raised the numbers considerably, as it will be easy to convince you by the history which we shall give of all the ways in which it has been practiced. We shall certainly not reproach the brilliant naval physician for overlooking this fact, for all that concerns dentistry has been ever neglected by physicians, and the special point which occupies our attention is still to them an unexplored region and a subject of controversy.

Dental engrafting consists in making a tooth live again which has been completely isolated from its normal position.

Some authors have admitted while others have denied the possibility of succeeding in such an attempt, the former founding their judgment on observation, the latter on reason. These latter think that the dental organ, which is nourished by vessels that penetrate the apex of its root, must inevitably perish after their rupture, and after that is incapable of again taking a part in the organism according to the conditions indicated in the definition which we have taken from P. Bert.

The former lean upon facts, which are certainly numerous. Without detriment to the history which we shall give with each kind of dental engrafting, we shall report some of these facts borrowed from different authors. Then we shall bring forward, as proofs, the experiments upon animals which have been made in connection with this subject.

## § II. *Proofs taken from observations made upon man.*

In Ambroise Paré (complete works. Malgaigne's edition, second volume, page 449), we read the following fact:

“A man, worthy of confidence, has assured me that a princess, having had a tooth extracted, had it immediately replaced by one which belonged to one of her maids. This tooth took root again, and, a little while after, she could chew with it as well as with the one which was extracted.”

A more complete and detailed observation is furnished us by Hunter.

“Mr. X. received a blow which knocked the first *bicuspid* out of its socket, and loosened the second. The first fell in his mouth, and he spit out, but immediately picked it up and put it in his pocket. Some

hours afterward he called on me, told me of the accident and showed me the tooth. On examining his mouth I found the second *bicuspid* loose, but well in place. The tooth which had been extracted was not quite dry, but as it had fallen on the ground, and had been some time in the pocket, it was very dirty. I plunged it at once into warm water, and after having left it there a quarter of an hour to soften it, I cleaned it as well as possible, and replaced it, after having introduced a probe into the alveolus to destroy the clot of blood which filled it. Then I fastened this tooth and the second one to the *cuspid* and to the first molar with a silk thread, which was left there several days and then taken away. At the end of a month, the two teeth were as firm as the others, and had it not been for his recollection of the circumstances narrated, Mr. X. would never have known that an accident had occurred to his teeth. It is now four years since this happened. (Treatise on Teeth, p. 133.)

Mouton devotes one chapter to the subject of transplanting, and another to *replacing*. As to the latter, he says that whenever a tooth has been accidentally extracted from its alveolus, it should be immediately replaced, as it will consolidate in less than a fortnight. He says that he has tried this several times with success. To him we owe the following observations, which, if authentic, are certainly interesting, for they show that the milk-teeth with small roots, partly worn away by the crowns of the teeth which are coming, can also be consolidated. "A fall having knocked out all the '*incisors*' of the lower jaw of a child of four years, I put them at once back in their places, and having fastened them with threads, they were quite firm in ten or twelve days—so firm that they no longer needed the threads to support them. I own that I had not expected success, and that it was an accidental experiment—but such was the result."

Here is another fact, taken from *Jourdain*, and relating to two teeth of a Savoyard, transplanted to another mouth.

In May, 1759, Mr. N., a law student, living in the Street St. Génévieve, came to have me examine the roots of a large and of a small upper incisor on the right side. After much consideration, I decided upon extraction, and the gentleman determined to have the teeth replaced by artificial ones. For many reasons, however, I advised him to have inserted the teeth of a Savoyard; the operation was performed that same day, and with so little discomfort that the student was able to attend to his law studies the very next day.

Fauchard (1786), in chapter XXX, notes "five observations of teeth

replaced in their alveoli or transplanted to another mouth, all of which teeth were firm." The following fact, which relates to the replacing of a root with the crown of another tooth, is still more surprising.

"Signor N. had left of a little *incisor* of the upper jaw only a root, which was rather decayed. This was unsteady from the suppuration of the gum. I extracted the root, arranged the decayed parts, put it back in its place, and put over it the body of a natural tooth, with a piece of gold inserted in the hole of the root. Thus was obtained a semi-artificial tooth, which the patient could use perfectly well."

We could quote many more cases of transplanting from the ancient authors, but they lack the details which would be guarantees of authenticity. This lack of precision, however, is found in nearly all medical observations published at that time. Nothing prevents our putting faith in the facts which they relate. Besides, why should they not have practiced transplanting teeth with success? Modern practitioners, in imitating them, have succeeded, and who thinks of doubting reports made by Joux, Taft, Mitscherlich, Dopp, or Magitot? To so many witnesses we could add our own name.

We have seen this process performed more than thirty times, and under more unfavorable circumstances than those mentioned. . . . What would prove decidedly, in our opinion, the veracity of the facts published, is the pains taken by their authors to follow up the persons operated on. Thus Fauchard proved the truth of the success after one year, Hunter after four, Bourdet after six, Taft after ten and sixteen years. We ourselves have almost always seen our patients fifteen or eighteen months after the operation, and have established the truth of a perfect cure. We conclude, therefore, that teeth can be transplanted successfully.

### III. *Proofs drawn from experiments upon animals.*

The experiments made to prove that a tooth properly transplanted resumes its nutritive connection with the organization, are not yet very numerous. Though generally incomplete, they are usually quite conclusive. Hear first the word of Hunter:

"I extracted from a man a healthy tooth, and having made with a lancet a rather deep wound in the thickest part of a cock's comb, I inserted the root of the tooth in this wound, and secured it with threads which were fastened around the comb. A few months later the cock was killed, and I injected its head with a very fine injection. Then the comb was removed and placed in a diluted acid. When the tooth was

softened by the action of the acid, I divided into two equal parts the comb and the tooth, following the length of the latter. The vessels of the tooth had been well injected, and I observed that the exterior surface of the tooth adhered everywhere to the comb by these vessels, thus forming a union similar to that of the tooth with the gum and alveolus. I must here say that this experiment, though tried many times, succeeded only once."

This well-known experiment was tried a little while afterwards by A. Cooper with success. Others have tried and failed, but recently Mr. Phillipeaux presented an account of his experiment to the Society of Biology, 1869.

"On the 13th of Jan., 1853, Mr. P. inserted the tooth of a guinea pig a few hours old into the comb of a cock. The tooth was complete, and placed in such a manner that its *bulb* was in the depth of the wound, and its extremity on the exterior. At the time of the experiment, the tooth was eight millimètres long and two millimètres in diameter. The cock was killed after ten months. The tooth, which, when it had been inserted in the comb, was entirely hidden in the wound, now projected five millimètres beyond it. Mr. P., having taken out the tooth, was able to prove that it was thirteen millimètres long—it had thus grown five millimètres. What forms the chief interest of this experiment, is that it concerned the transplanting of the tooth of a mammiferous animal to an animal zoologically different.

Twist (1842) reports that he replaced a child's tooth, and not only did it consolidate, but it grew as did its companion tooth of the opposite side.

Wiesemann (1824) experimented on some dogs in such a way that it proved the re-establishment of the vascular connections of the bulb. He pulled out a dog's tooth, and replaced it in a few moments. Two months afterwards the animal was killed, and the soft parts of the maxilla having been removed, it was placed for fourteen hours in hydrochloric acid. On examination, it was found that the part of the root outside of the alveolus was strongly attached to the gum. Numerous vessels, rendered visible by a very fine injection, went from this to the dental periosteum.

At the top of the root, a large vessel, filled with the injection, went to the end of the alveolus in the root canal, where one could follow it to its first bifurcation. It was evident that it was restored to the pulp, which was in nowise altered. This piece may still be seen in the museum at Bonn. To Mitscherlich we owe an analogous experiment:

"I extracted the second *molar* of the lower, left side, from a dog a year old, and replaced it. I killed the animal at the end of six weeks, cut off its head, and injected the two carotid arteries. The replanted tooth differed from the corresponding tooth on the other side only by being a little less firm. It had kept its natural color and clearness, and was perfectly surrounded on every side by the gum.

"After sawing it, I proved that the pulp was not altered: it exactly filled the cavity of the tooth, and contained the normal elements. The injection had only partially filled the vessels. The peridontium adhered exactly both to the root and alveolus, and there was no trace of suppuration visible."

Messrs. Magitot and Legros have made an interesting series of experiments on the transplanting of teeth which were in an embryonic state. They confirm the observations of Twist, and show that teeth transplanted not only are able to recover the nutritive connections which assure their life, but can even follow to a certain extent the physiological evolution of their development. Here is the result of their experience:

Six entire follicles, three *organs* separated from the enamel, one separated bulb—all taken from newly-born dogs quickly killed by the section of the bulb—were placed on adult *cobayes*, under the skin, which was immediately sutured. Transplantings are always either re-absorbed or eliminated by suppuration.

Seventy-eight transplantings have been practiced, from newly-born or very young dogs to old dogs. Out of twenty-six follicles, separate and entire, seven have resumed their nutritive connections, and have continued growing for fifty-four days in almost their normal manner.

Out of sixteen separated bulbs, only three have lived and found a real "*chapeau de dentines*." All the rest (five portions of maxillaires with follicles, seven bulbs covered with their "*chapeau de dentine*," four separated *chapeau de dentine*, nineteen organs separated from the enamel, one ditto with the *chapeau de dentine* underneath) were either eliminated or re-absorbed. We conclude, therefore, that only "complete follicles and separated bulbs can continue to live and develop." Second. That in certain cases the growth continues regularly, and without any other difference from the normal condition than is shown by a slowness in the phenomena of evolution. Third. That under other circumstances some difficulties have arisen in the formation of the ivory and the enamel. From what we have seen in this chapter, we cannot doubt the possibility of dental transplanting.

(To be Continued.)

## DENTISTRY ON HORSES.

It is generally believed, even among the best horsemen in the country, that glanders is quite prevalent among horses. Many a valuable animal has been killed by direction of his owner because of an offensive discharge from the nostrils, which has been considered as a sure indication that the horse is affected with that dreaded disease, glanders. The fact is, cases of glanders are few and far between. C. D. House, the veterinary dentist, says that in all his experience he has never known of but two cases, although he has known of hundreds of instances where horses have been killed because they were supposed to be affected with this disease. The whole trouble arises from neglect of the teeth.

Yesterday Mr. House operated upon the horses of the Hambletonian breeding stud, Dr. Flagg, C. M. Dyer, Washburn & Vaughn and W. G. Strong, pulling or cutting, or filing the teeth of nearly every animal he examined. In one of the horses' mouths the wolf teeth were found to be entirely covered by the gum, and detached from the jaw, so that every time the bit was moved in the horse's mouth, these teeth were turned, crowded and jammed in the gum, of course causing the horse to jump and run. Another case was found where the grinders had been worn rough and uneven, and were slightly displaced, so that the horse in eating was continually grinding away upon the inner lining of the mouth, keeping it constantly raw and painful, and of course making the beast cross and irritable. Still another case was where one of a colt's temporary teeth, after being partially forced from its place by the second teeth, had remained fastened by one fang, and in such a position as to grind continually upon the gum while the animal was feeding, and yet so nicely had the decaying tooth been lodged that its presence was only detected by the offensive odor arising therefrom. Several cases of inflammation of the gums were found which were accounted for by the presence of tartar on the front teeth, which was readily removed. Mr. House's operations yesterday were closely watched by a large number of horsemen, and many who were unable to account for sensitive mouths in their own horses became satisfied that the trouble was with their teeth.

The animals rather appear to like having their mouths worked upon, and Mr. House says he never had one attempt to bite him. He runs his hands and arms into their mouths freely, works away upon the sensitive parts without causing the horse to exhibit signs of pain or uneasiness. — *Worcester, Mass., Spy.*

INVENTOR OF THE TELEPHONE.

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Professor Alexander Graham Bell, inventor of the telephone, second and only surviving son of Professor A. Melville Bell, inventor of visible speech, was born at Edinburgh, Scotland, on March 3, 1747. Mr. Bell belongs to a family of teachers. His grandfather, Alexander Bell, was long established in London, and celebrated for his success in removing impediments of speech; his father practiced the family profession in Edinburgh, and his uncle, David Charles Bell, in Dublin. The three British capitals were thus, for many years, professionally occupied simultaneously by members of the same family.

But Professor A. Graham Bell has gone beyond the "family profession" by his grand invention of the telephone; although, no doubt, the world is in some degree indebted for this marvel of science to his preparatory studies and training for the inherited work of removing impediments of speech.

Telegraphy employed much of his time and thoughts from a comparatively early period, and the bold idea which he has now successfully developed into the speech-transmitting telephone, is known to have been in his mind, as a possible achievement and an object of practical endeavor, for years before it took form and substance in his hands.

An invitation to introduce visible speech into the day school for deaf mutes, in Boston, having been made to Professor A. Melville Bell, he obtained the transfer of invitation to his son, to whom the teaching of the system was now finally consigned. The success of the Boston engagement led to similar invitations from other similar institutions in Northampton, Hartford, etc., and Professor A. G. Bell soon became widely known throughout the United States in connection with the teaching of articulation to deaf mutes. His subsequent appointment as Professor of Vocal Physiology in the Boston University has given him the opportunity of training teachers to carry out his plans in deaf mute institutions; and at the present moment his pupils, by direct or indirect instruction, number some thousands in these establishments in the Eastern and Western States.

Recent events have shown, that while the days were thus engrossed with professional duties, the midnight lamp had been constantly burning, and the exploring mind had been restlessly at work in its favorite fields. The

telephone is one of the results. This instrument is sufficiently wonderful in its effects, but is further remarkable as a purely scientific invention, having been completed in theory before a single experiment was made. The telephone was gradually worked into practical shape by the solitary inventor toiling at his night's labor of love after the day's labors of duty were done, and sometimes scarcely allowing himself an interval of rest between the two.

Professor Bell's achievement obtained for him, a few weeks ago, a distinguished honor to be conferred on so young a man, in his election as a Fellow of the American Academy of Arts and Sciences. Scotland may well be proud of such a son, as America such a citizen.—*New York Scotsman.*

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## CHLOROFORM AND ETHER IN THEIR MEDICO-LEGAL RELATIONS.

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Dr. A. M. Denig, in an interesting paper before the Columbus Pathological Society, presents the consideration of chloroform and ether in their medico-legal relations, under the following three heads:

1. Can they be administered successfully to persons during natural sleep without awakening them?
2. Can they be forcibly administered for criminal purposes, in opposition to the will of the person to whom they are given?
3. Can a person give competent testimony as to what occurred during the anæsthetic state?

For convenience' sake he discusses them in reverse order, and arrives at the following conclusions:

1. In the third question, the person is supposed to take the anæsthetic voluntarily. Now the action of chloroform is divided into three stages—first, that in which the symptoms resemble alcoholic intoxication, in which the patient is often noisy and talkative and gives play to the emotions, etc. This stage is usually very short and rapidly passes into the second, in which the consciousness is wholly lost, and in which the patient lies passive and helpless. In the third case, narcosis is profound, the breathing stertorous, muscular relaxation extreme, and complete abrogation of all reflex actions. Every one who is at all ac-

quainted with the phenomena excited by chloroform and ether knows that there is a time during the first stage of the intoxication in which pain is nearly or quite abolished, and yet the consciousness of the patient is almost intact. At no time during this stage, however, is there a complete abolition of the power of volition, the patient is not deprived of the power of resistance, and they will frequently tell you that they were entirely conscious of all that transpired, and yet felt little or no pain if any operative procedures had then been made: Therefore there was a voluntary act of the will in allowing the operation to proceed, with a perfect consciousness of the fact that they could have prevented it had they so desired. Now if, during this time, any criminal act takes place, a passive, unresisting submission would imply her entire acquiescence in the act, and make her "*participio criminis*." But, when the power of resistance or outcry is abolished, the consciousness of a real motive for it is lost also. If, now, an outrage be perpetrated or attempted on a woman, she cannot be aware at the time of the liberty which is being taken with her person, and her statements should be entirely repudiated as either the product of her imagination or a deliberate and wicked misrepresentation for sinister and selfish purposes.

2. Can chloroform be administered forcibly? Ordinary experience in the administration of anæsthetics teaches us that none of these articles can be forcibly administered with felonious intent without the exercise of a force sufficient to accomplish the robbery or other contemplated crime without resorting to their use, and that, when such an allegation has been made, a careful examination of the facts will unequivocally prove a collusion between the parties—the assailants and the assailed.

3. Can chloroform be administered during sleep? Besides a number of successful cases scattered through the medical journals, the first systematic experiments made to answer this question are those of M. Dolbean, surgeon of Beaujon Hospital, Paris. Three different series of attempts were made by him, assisted by his "internes," and from his account it is obvious that the more the experimenters became familiar with the "*modus faciendi*" the number of persons successfully anæsthetized proportionately augmented; at first it was one in four, then two in six, then six in nine.

The experiments were made publicly, in the surgical wards, upon patients of all ages, and twelve M. of chloroform were given at a time upon a napkin, held some distance from the person's face. As out of the twenty-nine subjects on which these experiments were tried, ten—

more than one-third—were successfully anæsthetized, we may say that it is difficult, but it is certainly possible, to render a person insensible by the use of chloroform vapor administered during sleep. Accordingly, the expert must, in justice, declare that it is possible, if it is *not* easy, to render a person insensible by chloroform during a natural sleep, in order that he may be made the victim of a criminal assault.—*Ohio Med. Recorder*.

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### EAST TENNESSEE DENTAL ASSOCIATION.

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The eleventh annual meeting of this body was held at Cleveland, Tenn. commencing Wednesday, Sept. 19th, and ending Friday, the 21st. The meeting was largely attended, and proved to be one of unusual interest to the dental profession present. The first day's session was passed in reading papers and the discussion of the same. An interesting paper on "Filling Teeth" was read by Dr. W. C. Carson, of Cleveland. Dr. Jas. Carson, the President, presided at all the meetings except the night sessions, when Dr. S. B. Cooke, of Sweetwater, the Vice-President, filled the chair.

On Thursday morning at 8:30 o'clock the Association met at their session room, and after the Association was called to order the President delivered his annual address. His subject was "The Preservation of the Natural Teeth," but other points in the practice of dentistry were alluded to. The address was highly interesting and instructive, and contained a great deal of wholesome advice, not only to the dental profession, but to the people at large. On Friday morning the Association was called to order, and after some discussion on general subjects they proceeded to the election of officers for the following year, which resulted as follows, viz.:

Dr. S. B. Cooke, of Sweetwater, President; T. J. Speck, of Morristown, Vice-President; A. W. Palmer, of Kingston, Secretary and Treasurer; J. U. Lee, of Chattanooga, Cor. Secretary.

Sweetwater was selected as the place of the next meeting, which takes place the third Wednesday in September, 1878. The meeting then adjourned. Dr. Herman, of the firm of Herman & Morrison, was present with a full line of dental materials and instruments, giving the members of the Association a chance to examine.

## BOOK NOTICES.

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TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION at its Sixteenth Annual Session, held at Philadelphia, Aug. 1st, 2d, 3d and 4th, 1876. Publication Committee: C. Stoddard Smith, A. L. Northrop, L. D. Shepard. C. Stoddard Smith, Publisher, Elgin, Ill.

It is somewhat late, but as we have not before noticed this neat pamphlet of 229 pages, we will now say that it seems to be in every way a creditable production, and a very full report of the proceedings of the body. In either its essays or discussions, most of the prominent practitioners of the country are represented. The centennial meeting was one long to be remembered, and this report will ensure that result.

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"OUR TEETH," THEIR CARE AND TREATMENT.—C. Stoddard Smith, Publisher, Elgin, Ill.

A little pamphlet, bearing the above title, published by the Illinois State Dental Society, has been laid upon our desk for perusal, and we do not hesitate to recommend it to the attention of parents. If the teeth of very young children were brushed daily and looked after carefully, it would obviate much discomfort and suffering in later life.

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## NOTES.

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### Brooklyn Dental Society.

The Tenth Annual Session of this Society was held Monday evening, Oct. 8th, 1877.

The following officers were elected for the ensuing year: President, O. E. Hill; Vice-President, A. H. Brockway; Recording Secretary, C. P. Crandell; Corresponding Secretary, W. H. Atkinson; Treasurer, F. W. Dolbeare; Librarian, C. E. Mensch.

C. P. CRANDELL, *Recording Secretary.*

### Seventh and Eighth District Dental Societies.

The District Dental Societies of the Seventh and Eighth Judicial Districts of the State of New York will hold their Ninth Annual Union Meeting at 412 Main Street, Buffalo, N. Y., Tuesday and Wednesday, October 30th and 31st, 1877.

The sessions will commence at ten o'clock of the first day, and continue until the close of the second.

Members of the profession from other Societies, States and the Dominion, are cordially invited to be present and take an active part in the discussions.

Application for membership in either Society must be made on or before the first day of the meeting, to the Chairman of the Board of Censors, or the Recording Secretary of the Society of the district in which the applicant resides.

Separate meetings will be held by the Societies on Tuesday evening, for the consideration of applications for membership and such other business as shall come before them.

### SUBJECTS FOR DISCUSSION.

Irregularities, A. P. Southwick, Buffalo.

The Future Prospects of the Dental Profession, L. W. Bristol, Lockport, N. Y. Extraction of Six-Year Molars, T. S. Phillips. What we require, L. Balcom, Lockport, N. Y. Replantation, Geo. B. Snow. The transactions of the Dental Society of the State of New York: At what time, in what form, and at whose expense should they be published? J. Edward Line, Rochester, N. Y.

One or two microscopes will be on exhibition, and interesting specimens of normal and abnormal development of dental tissue will be presented, with opportunity for all to observe. This will be a valuable feature of the session, the specimens referred to being rich in peculiar developments that cannot fail to convey lasting impressions to every progressive member of our profession.

Clinics will be held at an hour which will be designated by the Business Committee, and cases of replantation will be presented, with other things of general interest to the profession.

#### OFFICERS.

SEVENTH.—T. S. Hitchcock, Seneca Falls, President; D. F. Wilcox, Newark, Vice-President; J. Edward Line, Rochester, Recording Secretary; B. F. Schuyler, Rochester, Corresponding Secretary; F. E. Howard, Geneseo, Treasurer.

EIGHTH.—G. B. Snow, President; N. Whitcomb, Vice-President; G. C. Daboll, Recording Secretary; L. F. Harvey, Corresponding Secretary; W. A. Barrows, Treasurer; M. B. Straight, Librarian.

#### DISTRICT BOARD OF CENSORS.

SEVENTH.—J. Requa, H. S. Miller, J. Edward Line, C. Elemendorf, P. H. Smith.

EIGHTH.—J. C. Gifford, L. W. Bristol, L. F. Harvey, S. A. Freeman, A. P. Southwick.

#### Biological and Microscopical Section of the Academy of Natural Sciences, Philadelphia.

The monthly meeting of the Section was held at the Academy, Monday evening, October 1st, the Director, Dr. Robert S. Kenderdine, in the chair, with a much larger attendance of members and strangers than usual.

Dr. J. H. McQuillen described the de-

velopment of the teeth and absorption of the roots of the deciduous or milk teeth, with the various stages through which the germs of the deciduous or permanent teeth pass in the formation of the enamel and dentine or ivory. The tooth is not secreted or excreted (like a shell is, by the mantle of the mollusca) by the tooth germ, but an actual metamorphosis of the latter takes place, the lime salts becoming united with the soft basis. The active agents in accomplishing this work are the columnar epithelial cells of the enamel organ and the odontoblast cells in the dentine pulp. The odontoblasts are found on the periphery of the pulp. After a careful and terse description of the process of calcification in the formation and subsequent eruption of the deciduous teeth, attention was directed to the fact that, as the teeth were formed by cell action, and as all tissues were constantly undergoing change—health and life, indeed, depending upon these mutations—so the exuviation or absorption of the roots of these teeth was but a retrograde metamorphosis of the cells of the dentine and cementum in accordance with the laws of waste and supply. For a brief period they serve a useful purpose, and when their mission is accomplished, the nutrient current is diverted to the germs of the permanent teeth. In support of this view, reference was made to the disappearance of the thymic gland, Wolffian bodies, supra renal capsules, ductus arterioses and other organs, which serve a useful purpose during foetal life, and after birth shrink into the merest vestige of an existence. In illustration of the subject, a large number of unique sections of the germs of developing teeth and jaws of human foetus and puppies were shown under twelve microscopes.

Dr. C. N. Peirce referred to the fact that at birth a child has the germs of twenty milk teeth in the jaws, to which the germs of eight more teeth are added at a later period. It was a matter of the greatest moment that children should be properly fed and protected from infantile diseases, so that these organs may be perfectly formed.

Dr. J. Gibbons Hunt alluded to the subtle nature of nutrition, and how little man can comprehend its operations. We may observe and describe phenomena, but the essence, the force that produces them, escape detection.

JOHNSTONS'  
Dental Miscellany.

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VOL. IV.—NOVEMBER, 1877.—No. 47.

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OBTURATORS, ANCIENT AND MODERN.

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BY N. W. KINGSLEY.

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(Continued.)

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In 1841 Dr. Warren Rowell, of New York, constructed an obturator which was sufficiently peculiar to entitle it to a place in history.

The case was one of extensive loss of the roof of the mouth, including nearly all the teeth, the vomer and turbinated bones. "The posterior portion of the palatine aperture was formed, to a considerable extent, of a semi-cartilaginous substance, possessing sufficient elasticity to allow a larger body than the opening to be pushed up through it, and that when so forced up it would be supported above the aperture by the edge returning to its original position. This, he hoped, would support a light plate, if the obturator could be so shaped as to rest upon the cartilaginous ledge after it was introduced.

Without quoting the description which is given of his method of procedure, it will be sufficient to state that the obturator which he constructed consisted of a plate larger than the opening in the palate, and covering the anterior part of the alveolar ridge, to which artificial teeth were attached, and an irregularly shaped drum or air-chamber, larger above than below, where it was connected with the palate plate. The neck of this bulb or drum is of the exact size of the opening in the palate, and the upper part, or summit, has several depressions, which correspond

with the irregular surfaces of the remaining nasal bones. The anterior part of the palate plate, to which the teeth are attached, as may be seen in Fig. 1, is composed of two plates, to compensate by its thickness for the deficiency of the alveolar ridge. The drum is seen rising from the palate plate, to which it is soldered. In Fig. 2 is represented a

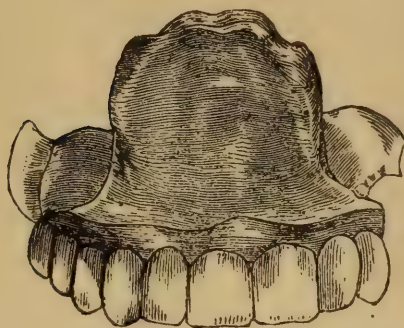


FIG. 1.



FIG. 2.

lateral view of the piece. The palate plate and drum are composed of fine gold, and made very light." Of this obturator it is stated that it was worn for several years with entire satisfaction, and restored the functions of mastication, deglutition and speech. Nevertheless, the weight of the piece must have been such, together with the strain upon the orifice in its constant removal, that it could not have been permanently supported by resting upon the superior border of the aperture.

It is quite likely that its permanent usefulness arose from the nicety of its adaptation, and from the skill acquired by the patient in its management.

We see this last principle illustrated often in cases of badly fitting dentures on the upper jaw, that will not keep their position for a moment except by the constant activity of the adjacent muscles, and yet the wearers will retain them in position during the most lengthy and trying ordeals.

Dr. Rowell's obturator was probably so well adapted to such a case, that there could be no improvement upon it in form, and could be bettered only by a change of material for something of less specific gravity.

Dr. S. P. Hullihen describes, in the *American Journal of Dental Science*, an obturator which he constructed for a case where the velum was lost by disease. He says :

"An artificial palate made upon this plan will be composed of four parts: 1st, a valve, made from gold-plate, as thin as it can well be worked; 2d, a spiral spring about an inch long, and of the size usually made for

whole sets of teeth; 3d, a slide, one inch and a half in length, and  $\frac{3}{4}$  of the width and thickness of a common watch-spring; 4th, a plate, larger or smaller, as the case may require, struck up in the usual way, to fit the roof of the mouth.

The size and form of the valve is obtained by taking an impression of the posterior opening of the nares. The plate composing it should be struck up in two parts, front and back, which, when soldered together, makes a hollow body (*a*), as shown in Fig. 3. At the upper end of

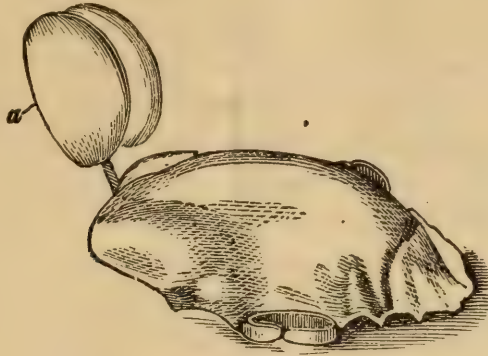


FIG. 3.

the valve a small pin is soldered, the point of which looks downward, and of sufficient thickness to fit very tightly in one end of the spiral spring. The spiral spring must be made of such a length as will permit the valve to rest slightly upon the upper surface of the remnants of the lost velum. The slide has a pin in the posterior end, looking upward to receive the other end of the spiral spring before described. The anterior end of the slide has a small button looking downward. The slide is attached to the plate by two small clasps (*b b*), as represented in Fig. 4. The plate may be made to cover the entire roof of the mouth,

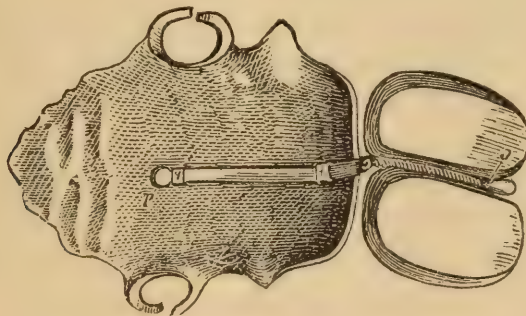


FIG. 4.

when necessary; or it may be made only sufficiently large to permit the mounting of the slide. These different plates, when put together, par-

ticularly if the plate is to cover the whole roof of the mouth, make a plate of the form represented by Fig. 3.

Fig. 4 shows the attachment of the spiral spring to the valve and slide (*c c*). The staples (*b b*) confine the slide to the plate, and there is a button (*d*) on the end of the slide, by which the valve may be set back or forward, as desired by the patient, without removing the plate from the mouth.

The plate should be made to fit the several parts for which it is intended with great exactness. The plate must fit the roof of the mouth, and the teeth to which it may be secured, in a faultless manner. The slide must be arranged so as to permit the valve to be drawn so closely against the posterior opening of the nares as to close them, or to be pushed back, so as to leave them entirely unobstructed. The spiral spring, as I have before remarked, must be made of such a length as will allow the valve to rest slightly upon the upper surface of the remnants of the lost velum. The valve should be sufficiently wide at its base to overlap the remnants of the velum so far as the parts on each side will permit, without producing irritation. No other part of the valve than the base should be allowed to touch, unless when brought forward against the nares. Unless all the parts are so arranged, the palate will not be properly constructed, and will not, of course, answer the desired end.

Thus it will be perceived that the peculiarities of this plate are : 1st, a valve to fit the posterior opening of the nares; 2d, the attachment of this valve to a slide, by which the patient is enabled to adjust the valve while in the mouth in such a way as to admit through the nares just the quantity of air desired; 3d, the mounting of the valve on a spiral spring, which will permit it to vibrate backward and forward as the breath is inhaled or exhaled, and also to be moved by any muscular action that may remain in the remnants of the lost velum, thereby answering, to a great extent, the purposes of a velum."

It is hardly conceivable that such an instrument, bearing in no sense a resemblance to the lost organs, could possibly restore to any degree the lost functions.

That it might have been of some benefit in a single case is possible; but as a principle for general application it is defective, and, in view of modern improvements, the experiment is not likely to be repeated.

*(To be continued.)*

“ ‘GOLD A TEMPORARY STOPPING,’ IF MADE SUCH.”

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By C. M. WRIGHT, Basel, Switzerland.

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In Johnstons' MISCELLANY for September, Dr. Marshall H. Webb does me the honor of presenting what he is pleased to call a "reply" to an article on "Gold a Temporary Stopping." The *réply*, however, is really contained in the addition to the heading of the article published in July—"if made such." Of course gold is a temporary stopping, if made such; but that does not prove that it is not a temporary stopping in the cases that Dr. Smith referred to, nor in the soft, white, half-mineralized and young teeth that my article referred to. The doctor places himself in the position and imitates so perfectly the brother in the article of July, "who tells me of his grand operations, of their permanence, and in a fatherly way advises me to emulate him," that I almost expected to see a patient from Lancaster in a few minutes, with one of these permanent fillings wrapped up in a little piece of a torn envelope, or rattling about in a little test bottle. "The mere insertion of a material does not constitute an operation for the preservation of tooth substance." "The manner of the performance, etc., etc., is what ought to be more particularly noticed." What stately platitudes! what undisputable axioms! Then the doctor devotes some sentences to questionings. Does Dr. Wright know what a first-class operator is? Has he cultivated his judgment to the point where personality shall have no influence, and only the operations, and a certain number of operators (said number not specified), shall enter into the consideration? Has he, by former study, and in agony of soul, and in spiritual wrestlings, deeply enough impressed his mind with a regard for *truth*, and the necessity that exists to *delve* for it, before he ventures to compliment gentlemen in Europe or Cincinnati as *first-class operators*? Oh, yes, doctor, indeed I have—I have sweated in winter and had chills in summer. I have laid awake nights. I have had visions and have thought and worried and experimented and labored in this one direction of filling teeth with gold. Years ago I was struck with a genius for plugging teeth, and gave my "experience" in the old *Dental Register*. For over five years I have stood up from morning till night, every day excepting Sundays, in cloudy weather and sunshiny, through heat and cold, at one window with a southern light, at one chair of a certain height, and for tall patients and little children, here in this lonesome old town, on the banks

of the Rhine, have plugged, stopped, filled, packed, wedged and plumbirt teeth with gold. I had read the article referred to as containing the "definite principles" of operative dentistry, as also the papers that followed in the *Cosmos* of 1876, and accepted the method described as *one* way to do it, in certain cases; but in justice to my Cincinnati friend, whose pardon I must beg for having so unintentionally held up to criticism, I should like to say that he was filling teeth on this definite principle in Cincinnati in 1862-3. I know it, because I have malleted for him many an hour. Also, that Dr. J. Taft, and afterwards Dr. Wm. Taft and Dr. Corydon Palmer, have all taught these definite principles, in the Ohio Dental College, to successive classes for many years past. Does anybody doubt the *first-class* quality of their operations? But I forget; I must not compliment till it is established that I know what a first-class operator is. According to Dr. Webb's paper, it is not more than about four years since he operated "in a manner somewhat similar to Dr. Smith's methods"; and if I correctly understand the quotation from Dr. Smith's letter, and the article from Dr. Webb in February, 1876, Dr. Smith's "methods" includes the definite principle of Dr. Webb.

Dr. Smith, I am confident, commends himself to dentists of good judgment, in the quotation which Dr. Webb so condemns. Can it be possible that in 1877 an intelligent dentist will quarrel for one method of using gold, and condemn his neighbors for not employing it as he does, after all we have had in our societies and journals on the subject? Can it be possible that only one method is *first-class*, after the superior knowledge we have had opportunities of acquiring about gold from the writings of Black, Leslie and others?

About a couple of years ago, as Dr. Bogue and I sat in a garden on the banks of this old Rhine, he said: "What would you think of a physician who carried calomel in one vest pocket and jalap in the other, and administered these in every case that presented?" And we were conversing about dentistry. Practically one man may be able to employ cohesive gold better than he can any other, after trial. It may be on account of his muscles, or his peculiar way of holding his instruments—men handle excavators differently. Another can acquire skill in the use of soft foil. Both may and can accomplish *perfect* work—I use the term *perfect* in its mechanical sense.

Gold is the wonder of the dentist and the artisan. How variously can it be coaxed into forms! With properly arranged cylinders, a skillful dentist can introduce a filling of from 25 to 30 grains in as many minutes, depending on the wedging principle, and having done away

entirely with the cohesive quality of the material. The next hour he can half fill a cavity with non-cohesive balls, “rolled between his fingers,” and finish with cohesive gold. Again, he can begin with a retaining point, and build on layer after layer of pure gold with a little ivory spatula, employing no *force*, and depending solely on the wonderful cohesion—the welding, by cohesion, of pure gold (the plastic quality of gold). With the former methods he must employ force and muscle of no mean order. Others, again, will seize the delicate queen of metals, and with a blacksmith’s hammer pound her to the tune of 5,000 or more taps for a filling, and still she consents to be made into a “first-class” operation.

If Dr. Webb denies these statements about the working properties of gold, it will be on account of his not having arrived at the knowledge of the subject he proposes to teach. If Dr. Webb, knowing these qualities of gold, *prefers* the “retaining point and cohesive method” in all cases, I kiss my hand good-naturedly to him across the seas. His small hand and light touch and patience may have made him more suitable to woo the golden queen after this method. There are dear brothers who have large hands, tense muscles, big hearts, who have the courage and the skill to reduce, with a few masterly cuts, many of the tortuous sulci to *mere holes*, and in a few minutes set golden gems where once black decay did revel. If this strong brother becomes arrogant, and condemns *in toto* Dr. Webb’s *method*, he makes the same sad blunder in science’ path that Dr. Webb does when he condemns others’ methods, and when he tries to place his own definition to “first-class operations,” and expects others to change their nomenclature.

Is it modesty, or truth, or the faults of the “exact principles,” if Dr. Webb “must say,” “that he *never* performed an operation that he did not see some point, or *points*, where he could do better, had he to perform the same again”?

Even I, a miserable, expatriated dentist, delving for truth (and bread, and, as I have before said, good clothes, and some of the cakes and ale of life), away over here in Switzerland, where I have had to make such an up-hill struggle to acquire the languages of my patients, after the proper time for acquiring new tongues had passed, do succeed in making lots of *perfect* gold fillings; and I perform many operations where I see no points that I think could be made better, even if I had to do them over a half dozen times. And still I think I know what a first-class operation and a first-class operator is. I have bemoaned my failures many a time and oft. I have taken them to my heart, and have acquired

almost a chronic blush on account of them, and am honest with myself in acknowledging the causes of failure—among which are laziness, inability to perfectly control my patient, hurry, incompatibility of the electric currents, sympathy, etc., etc., producing bad work; but the bad work is not always that which fails to preserve—otherwise, where would all Dr. Webb's operations go, according to his admission? What I also strive for, is to improve by diet, and the other means known to the profession, the *quality of the teeth of my patients*. This is the question of the day, and this is what Dr. Smith meant in his remarks at the Mississippi Valley Association, and this is what stirs the minds of the lights of our profession in 1877, and not a definite principle of applying gold. Let us get at definite principles in the pathology and chemistry of the mouth and teeth and body, and our mechanics will stand.

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## É TUDE SUR LA GREFFE DENTAIRE.

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PAR LE DOCTEUR TH. DAVID.

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(Continued.)

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### CHAPTER II.

#### *Pathological anatomy and physiology.*

In order to succeed, the transplanting passes through a whole series of organic phenomena, which begin with the separation, the complete isolation of the part transplanted, and end when this has recovered all its nutritive connections, which assure its life.

We will consider it under three heads: 1. Extraction. 2. The Replacing. 3. The Reunion.

#### *Extraction.*

By the act of "extraction," the tooth is separated from the organism to which it belonged. In the adult stage, the tooth is composed of two parts topographically distinct—the *crown*, which is quite outside the jaw, and the root, which goes into a bony tissue, to which it adheres by the peridentium. The apex of the root receives through its canal with a nerve fibre a vascular fasciculus, which brings it the nutritive materials destined for the pulp. We see this fasciculus, which is very large when the roots are not entirely formed, grow smaller and smaller, and when,

at an advanced age, the cavity of the pulp begins to be obliterated by the formation of secondary dentine, we even see the pulp and its branches disappear entirely. The peridentium is also a source of nourishment, but especially for the cement, and through this to the dentine, whose canaliculi would be in communication with the cementum. It is this peridentium which, by its adhesion to both alveolus and tooth, gives the latter its fixidity. By it the teeth live which are wanting in pulp. Its vascular relations are on one side with the pulpy fasciculus, on the other with the gum. The differences brought about in the state of the peridentium by incomplete luxation and extraction, are easily understood. In the first case, the gum, which is always elastic, remains in direct communication with the peridentium and we know that it is a very vascular membrane. Incomplete luxation is used in dental pathology to change certain deviations (rotation on the axis), and to break the nerve fibres in the case of painful decay. In the second case, the peridentium has no nutritive connection left. So we have not engrafted, since there is not complete separation.

What goes on during the extraction of a tooth ?

Many admit that the peridentium is then divided into two layers, the one dental, which the root takes with it, the other pertaining to the alveolus, and staying in its place. Others think that the whole peridentium comes with the extracted tooth, and that the bony tissue of the alveolus is thus laid bare. What would appear to confirm the latter opinion, is the fact that after the extraction of a tooth the alveolus seems rough. . . . It is evident that, considering the organic phenomena which assure the consolidation of the deplaced organ, it is not a matter of indifference whether the surfaces brought together be represented by a similar tissue, as the periosteum, or by different tissues—bone on one side, periosteum on the other. However, it may be the periosteum is by the extraction either torn or pulled out, and the part that comes away with the tooth has entirely lost its vascular communication with the alveolus, with the gum, and with the tooth pulp which is forcibly sundered.

Considered from the point of view of the vital phenomena which are produced in the operation of transplanting—that is to say, the interruption and re-establishment of the nutritive actions—the isolated tooth seems henceforth to be composed of pulp and periosteum only. In truth, organic phenomena of nutrition are either rudimentary or nothing at all in the enamel, and feeble in the ivory and cement; and it is certain that it is not by these (ivory and cement) that the tooth loses or retakes its communications with the organization.

In describing the *greffe*,\* we will let these two tissues alone, speaking only of the periosteum and pulp. We shall not say much, either, of the pulp, which may often be lacking through decay or senile atrophy, and which is, in reality, not essential to the organic reconsolidation, which is effected, as we shall see, only through the periosteum.

The extracted tooth depends entirely upon its own vitality. What do we mean by this? When life ceases in any portion separated from the organization, the histological elements preserve for a certain time their special properties, so long as they contain enough reserved nutritive materials to resist the fatality of chemical laws. But all these properties and the functions which flow therefrom need, in order to *act*, to retake the lost conditions, so that all the vital phenomena are reduced in the isolated portion to a partially latent life, consisting exclusively of the maintenance of the cellular nutrition. This partial life constitutes the vitality. As long as this goes on, the isolated part, when replaced in proper conditions, can take back its complete life; its existence is a necessary condition and *sine qua non* to the success of transplanting.

We understand, therefore, the importance in regard to the *greffe* of determining the length of the vitality of the isolated part. Unfortunately this can only be experimentally demonstrated—for no chemical or physical analysis can enable us to affirm the death or life of any part which has been separated from the organization. Here we lack the documents and experience which would help us to determine how long the separation might continue before endangering the success of the transplanting. The observations made so far have never made the duration of the isolation more than three hours.

Mr. Ollier, the eminent surgeon of Lyons, who has devoted much attention to the *greffe*, and especially to the transplanting of pieces of the periosteum, says that this tissue is the one which seems to have the most resistance and the greatest longevity. He has taken pieces of the periosteum which were taken from an animal which had been 24 hours dead, but had been preserved at a temperature of 0°. \* \*

We must say a word about the diverse influences which modify the vitality of tissues in general. In applying them to the dental *greffe* we shall form an idea of the conditions which are favorable to it, and of those which are unfavorable or render it impossible.

The healthier the periosteum, the longer will it be able to preserve its vitality, independent of other influences. Brought into the outer air

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\* "Grefie" is used to denote either replanting or transplanting.

the isolated tooth is subject to the direct influence of the heat and the hygrometric conditions and surroundings.

Mr. Bert says: "Cold, instead of hindering the success of transplanting, helps it, by preventing the disorganization of the elements of the tissue, and by preserving as long as possible their essential properties. Above  $+16$  putrefaction operates rapidly in the organic tissues.

What also makes vitality disappear more quickly in the heat than in the cold, is that the first accelerates the nutritive action. These conclusions, drawn from many experiments, apply as well to extreme temperatures as to the physiological temperatures from  $0^{\circ}$  to  $30^{\circ}$ . But we will say that these influences begin to take effect only after a certain time of isolation—in general, two hours.—(G. Martin).

Dampness, no less than heat, favors fermentation and organic decomposition. We know that from the case of the putrefaction of bodies. Extreme dryness, although not bringing the same difficulties, would change the proportions of water in the isolated part, and would render more difficult the nutritive exchange of the anatomical elements. It is unnecessary to say that all the known means for destroying or altering the organic matters—irritants, caustics, etc.—would be destructive to the vitality. Let us add, with Dr. G. Martin, that in spite of all the researches and experiments made, no liquid capable of prolonging vitality in the tissues is known to exist. Perhaps a weak solution of potassium would answer the purpose. It is easy to supply these general ideas to particular cases. In summing up what treats of the vitality of the isolated tooth, we should say:

1st. That, from lack of experience and experiments, its length has not yet been determined.

2d. That it is necessary, when the transplanting does not take place immediately, to place the root of the tooth under the most favorable conditions to preserve the vitality of the periosteum—a low temperature and weak hygrometric condition.

3d. That these conditions may be neglected when the isolation lasts only a short time (from one to three hours.)

In this study of vitality, we have spoken of the periosteum only. The same remarks might be made of the other dental tissues, as the vitality of the cement, comparing it to that of the bone, etc. But on this point we have as yet no exact ideas, and besides, we have already stated why we keep silence on this subject. We are quite ignorant of what goes on in the pulp after extraction. It would be easy and interesting to study, in extracted teeth, the kind and the rapidity of the alter-

ation which it goes through. The vascular richness of this organ makes us suppose that its vitality must be shorter than that of the periosteum, and that it must soon give way to disorganization.

### *The Replacing.*

The tooth, momentarily separated from the organization, returns to it to resume its primitive connections, under the influence of the interior surroundings. Let us take only a simple case, where it is replanted in an alveolus. What goes on between these two surfaces which are brought in contact?

The tooth, modified by having been in the exterior *milieux*, does not immediately submit to the influence of those in which it now finds itself. Before any organic action begins to make the two surfaces adhere, they are in purely physical relations to each other. This conformity is never very perfect between two surfaces made by extraction. But the irregularity of the wound which causes it in soft portions is not found here. Although made by extraction, the surface of the root seems usually very regular, and if the peridentium comes entirely upon the tooth, it merely comes off without being torn. Thus we have (unless there be pathological alterations) two polished surfaces ready to come together—the root and the alveolus. The joining will be as perfect as possible if the tooth be replanted in the same alveolus; in all other cases, less so. The adaptation can be aided by a light pressure made by a suitable instrument. It is equally important, for the reunion of the two surfaces, that nothing should come between them. Thus any blood coming between might be a hinderance to the success; and we would advise that the bleeding should be stopped, before the operation, by a cold and slightly astringent *topique*—*alcoholized* water, for instance.

What are the vital actions which are to take place between the two surfaces? Here not only experience is wanting, but it is very difficult for us to form an opinion, since we do not quite know the nature of the alveolar surface, and since we ignore whether it has or has not the periosteum. However, there can be no doubt that here, as elsewhere, the adhesion of the isolated part takes place after the manner of union by first intention. To all appearance, the first vital phenomena would seem to be the interposition between the two surfaces of an organic matter, either plastic lymph or embryonic cells, proceeding from the *proliferation* of the conjoined tissue. Its object is to establish a temporary union between the two surfaces, by which the nutritive exchange recommences. It is understood that the ulterior phenomena vary

according to the nature of the tissues joined. The effused matter, when it joins two sides of the periosteum, changes itself into analogous tissue—that is, precisely the same phenomena as in the immediate reunion of ordinary wounds. In the other case, there would probably be a production of bony tissue between the periosteum and alveolus, adding itself to and soldering the latter. We have still but little light on this subject. Divers circumstances favor these first vital actions, which have for their object the production of organic adhesion. In the first place, there is the extension of the surfaces brought in contact. A considerable extension, which, during the isolation of the tooth, would injure the vitality, becomes, on the contrary, a favorable circumstance to the nutritive relations, after the joining of surfaces together. The result of this fact is, that the more bulky the root, the more successful will be the transplanting; a molar will be more firmly fixed than an incisor, and an entire root than one which has been divided.

The remark which surgeons have made on the *vascularity* and the influence which it exerts upon the immediate reunion, applies also to transplanting. We see, then, that this condition is favorable to the success of the transplanting, although not favorable to the vitality of the pulp itself. In its normal state, the dental periosteum is only slightly vascular, in fact, almost wanting in vascularity. Shall we conclude from this, that the transplanting would succeed better with a *congested*, granulated, that is to say, *inflamed* periosteum? We would remark here, that we shall speak only of a pathological vascularity, which cannot be confounded with the normal vascularity of a tissue, or that which relates to the anatomical texture. Mr. Martin says that the more compact and close the texture of a tissue, the more chance there will be of success in the transplanting. Density is more favorable than vascularity. From many experiments, this author has drawn the following conclusions :

- 1st. Bring together two loose tissues—a negative result.
- 2d. A compact tissue with a loose one—still a negative result.
- 3d. Two compact tissues—a positive result.

The dental transplanting seems to us to be made under conditions very similar to the last named. The organic phenomena of this operation taking place in a mouth where the temperature is high and constant, is not affected here by the influences which it (the temperature) exercises upon transplanting in other places, and on wounds in general, which cicatrize better in the heat than in the cold.

It is understood, too, that the immobility of the two surfaces joined

greatly favors their organic reunion, in permitting the new and stretched cells to be in more intimate relations with the cells of the tissue upon which they are planted. This immobility also prevents hemorrhages, by keeping the surfaces well in contact.

By means of these vital phenomena, modified by the conditions which we have mentioned, a nutritive exchange has been made between the isolated part and organism, and the former has resumed its primitive connections, which assure its life henceforth.

How were these connections resumed? How did the transplanted part re-enter into the domain of the general nutrition? These are points which should be established in the pathological physiology of the *greffe*. But in order to do that in an exact manner, one would have to make many experiments, and observe at different times the condition of the united portions; one could then decide the succession of phenomena to which the success of the *greffe* is due, from the time of the transplanting until a perfect consolidation is effected. On this subject we possess only two observations, mentioned before, those taken by Wiesemann and Mitscherlich; and even these lack detail—they are not taken with that precision to which we are accustomed in this scientific age. These authors content themselves with stating, without saying by what means they have ascertained, that the periosteum of teeth which had been transplanted for several months was found in vascular communication with the gum and alveolus.

Everything would seem to show that it is by immediate reunion that the periosteum becomes joined to the gum. But, as we have already said, if the alveolus is deprived of the periosteum by the extraction, it is probable that its reunion to the tooth would take place a little differently; and, in fact, in all the replantings which we have witnessed, we have always observed the joining of the gum from the second day after the operation, although there was no manifest adhesion to the alveolus, which was proved by the extreme mobility of the tooth. However this may be, and regretting that we have no more precise details, we conclude, with the greater number of authors, that the dental periosteum does resume its normal conditions with the gum and alveolus. Now let us examine the state of the pulp—when it exists. We are disposed to think that its nutritive relations are not re-established, and that it ceases to exist.

Is not this belief understood when following the example of certain authors, Dupont in particular, it is proposed, by either complete or partial luxation, to break the pulp to cure its aching when exposed?

We possess, however, two facts which tend to prove the preservation of this organ. They, also, are the experiences of Wiesemann and Mitscherlich. The more recent experiment of Philippeaux, relating to a tooth transplanted with success into the comb of a cock, says nothing upon this subject.

But the circumstance that the tooth had grown three millimetres, would seem to convince the author that the tooth had entirely resumed its nutritive connections.

Still, we must take into consideration that a tooth may grow in length without the pulps having anything to do with it, and only by the development of the root, for which the periosteum is sufficient. Whatever explanations we may give in regard to Mr. Phillipeaux's experiment to show that the tooth contained no pulp, we cannot contest the facts reported by the two other authors, and which are emphatically affirmed. They have not only proved the re-establishment of vascular communications of the pulp, but also its complete preservation and the presence of all its normal elements.

We must say, admitting the possibility of the preservation of the pulp, that it cannot be so in every case. In point of fact, this organ, which in old people is continually diminishing, so that it sometimes disappears entirely, is not bulky, and the dental canal is scarcely perceptible—which conditions are not favorable to the re-establishment of vascular communications. In the case of children, when you take teeth that are partially developed, the pulp is, on the contrary, very large, and communicates largely to the exterior by a thick *pedicle* through the large root canal. It might be, then, that such conditions would allow the vascular re-establishment, but we put beyond a doubt the impossibility of re-establishing the nervous communications of the pulp.

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## “CONSERVATION OF THE DENTAL PULP.”

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By F. F. DREW, D.D.S., of Baltimore, Md.

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I beg leave to offer, through the medium of the DENTAL MISCELLANY, a few ideas based upon actual experience in connection with the above subject.

The method of treatment which I have adopted differs but *little* from those heretofore recommended; but inasmuch as life is made up of little

things, I have thought that *any* difference from the prescribed methods, no matter how small, might be of benefit to us as dentists, and enable us to arrive at a treatment which will stand the test of time.

The substance which seems to have met with the greatest amount of favor from the profession, is the preparation known as oxychloride of zinc, the chief objections to which seem to be its violent escharotic and non-durable properties. On the other hand, the considerations which can be adduced in its favor, are its non-conducting and antiseptic properties; two very important items in favor of a substance designed as a covering to an exposed dental pulp.

My design in writing upon this subject is to show that, as far as the objections to this preparation (oxychloride of zinc) are concerned, they can, by judicious management, be easily overcome.

In order to demonstrate my meaning, I beg leave to give the *modus operandi* which I have adopted for some time. . . . After ascertaining that the pulp is really exposed, I adjust the rubber dam, in order to exclude all moisture during the operation—as, in my opinion, it is important to observe as much care as if gold were being used. I next proceed to prepare the cavity, taking care not to wound the pulp unnecessarily. I then introduce in the cavity a pledget of cotton saturated with oil of cloves, and permit it to remain a short time. This preparation (oil of cloves) will be found to have a very soothing effect upon the exposed pulp, and will prepare it in a great measure for the reception of the os-artificial. I am in the habit of applying *immediately* over the exposure a thin section of cork, which may be retained *in situ* by a solution of gutta percha in chloroform. Having accomplished this much, I prepare to mix the oxychloride of zinc as follows: Take of the oxides of zinc and tin equal parts, and after incorporating them, moisten with the *chloride, using only sufficient* to make a thick paste, about the consistence of putty. If this precaution be observed, no fear need be entertained of giving pain during the introduction of the filling, as the suffering so often witnessed while using this material is entirely due to an excess of the chloride of zinc, thereby drowning the nerve, so to speak, in a powerful escharotic. The sooner the filling is introduced, after being mixed, the better, as it undoubtedly weakens it to break up its particles after they have once commenced to set. The advantage claimed for the admixture of the oxide of tin, is that it renders the filling harder and more dense, thereby enabling it to resist the action of mastication for a longer period than would the plain oxychloride of zinc. After introducing the filling, I allow it to set perfectly before removing the rubber

dam, after which finish off and discharge patient to await developments. If no subsequent trouble ensue in the course of a month, a sufficient quantity of the os-artificial may be removed to admit of a gold or amalgam capping.

The foregoing is a condensed outline of the plan I have adopted in all cases (the minutiae of which I have presumed upon the operators knowing), and I can certainly say that the results thus far have exceeded my most sanguine expectations.

I hope other members of the profession will experiment in this direction and report results.

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## EXTRACTS FROM AN ADDRESS TO GRADUATES OF THE NEW YORK COLLEGE OF DENTISTRY.

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By PROF. FRANK ABBOTT, M.D.

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MR. PRESIDENT, LADIES AND GENTLEMEN :

On behalf of the Trustees of the New York College of Dentistry, and of my colleagues, I thank you for the interest in our profession which your presence here makes evident.

It is certain that dental surgery has established its right to a place in the company of specialties gathered in the great arena of general medicine; and it is equally certain that this extension, in the public estimation, is largely the development of but comparatively few and late years. Dental surgery, as a distinct specialty of medicine, is of our age alone. Less than one hundred years ago there was not a dental surgeon, known and practicing as such, in this country; and for many years thereafter the increase in the number was very small. In 1825 there were about two hundred in the United States. The census of 1850 gives a total of about three thousand, of which number more than one-third were to be found in the States of New York and Pennsylvania. In 1870 there were recorded seven thousand eight hundred and thirty-nine, and a very accurate estimate places the present number at eight thousand and eight hundred. It is an axiom of political economy that "demand regulates supply;" hence these figures present, more forcibly than any other method of statement, the rapidly growing appreciation of the value of dental operations on the part of the public.

If we seek the cause of this general demand for such services, shall

we find it in the fact that the teeth of modern times decay more rapidly or are more extensively diseased than those of past generations? I am not of that opinion—for that theory, though held by some, is founded almost entirely on conjecture, and with little, if anything, worthy the name of evidence to support it. The true secret of the numerical advance of American dental surgeons is, without doubt, an extended and daily increasing public confidence in their capabilities and acquirements, and an enlarged public appreciation of the field of the profession. Long years ago, when dental surgery was, indeed, very young, such operations as were performed at all—and they were not many or of much importance—were conducted almost entirely by medical men, themselves few and isolated, and overburdened with general practice. As dental surgeons proper began to appear on the scene, they met with violent opposition at almost all hands, and principally because of their slight attainments and unskillful and even bungling operations. Painfully conscious of the short-comings of the specialty in these respects, a few enthusiastic and able men succeeded, in 1840, in establishing an institution for the teaching of scientific dental surgery. It was a hazardous undertaking—a specialty without a scheme, special knowledge, teachers or a literature, endeavoring to correct the evils of past ignorance and to establish a correct standard for the future. Such was the forlorn hope for which these truly heroic men volunteered. Under such discouraging circumstances they essayed to give such instruction to those attending their classes as should, by placing them on a scientific equality with the other members of our learned profession, at once remove the stigma of ignorance which oppressed it, and afford it proper claims to the title of a specialty of medicine.

Not in vain have they labored. From such an apparently unpromising germ has been evolved the splendid constellation of dental colleges now in existence—which, in turn, have so advanced the status, as well personal as public and professional, of the dental surgeon, as to have made him a cultivated gentleman, a necessary and esteemed practitioner, and an honored and useful member of the great brotherhood of scientists.

The last assertions, though true in general, are more especially applicable to the larger centres of population. In many sections—and even, I am sorry to say, in some instances in our midst—the claims of dental surgery and the position of the dental college as a factor in the general scheme of extended scientific instruction and culture are not correctly understood or duly appreciated. But I shall make no appeal either to

sympathy or the understanding to gain the correction of what I may properly call "this evil." Time, which proves all things, will vindicate our cause by universally establishing the degree of D.D.S. as the badge of a complete and thorough special culture—a culture by far the best calculated to correctly appreciate and permanently remedy all the dental "ills that flesh is heir to"—and by placing, everywhere and with every person, the educated dental surgeon on terms of perfect equality with the scientist of any other denomination.

Such is the verdict you have been and are now assisting us to have rendered by the world. To America is due the honor of having given birth to the scientific dental surgery of to-day. The American dental surgeon is known and celebrated the world over. Hence the American people are the most deeply interested of all nationalities in fostering the growth and raising the standard of capabilities of what is almost a purely national specialty of the healing art. To secure such results you have only to set your faces against the arts of the empiric, to refuse your countenance and patronage to the incompetent, and to place yourselves only in the hands of such as, by previous and proper education, are worthy the important trusts you repose in them, and capable of meeting any and all exigencies of disease in a proper and scientific manner. Thus we shall feel that in your hands may be safely left the question of aid to the future of the American specialty of surgery.

In reading, select such works of known value and authority as will best aid you in the accomplishment of your ends. Bacon said: "Some books are to be read only in part; others to be read, but not attentively; and some few to be read wholly, and with diligence and attention." Be not too much influenced by the authority of an author's name. Subserviency of opinion is not to be encouraged in the scientific man, for all are fallible, and the world advances not through "the blind leading the blind."

It will save you much of useless and unprofitable labor to aim at learning correct *principles* rather than *secondary results*. Thus you lay foundations on which to build—or, rather, plant seeds that will grow and fruit, almost unconsciously to yourselves, with a fruitage sure to be desirable and of value. No amount of proficiency in details will compensate for a want of intimate—I might say familiar—knowledge of principles. A man thoroughly conversant with results may accomplish the labors of ordinary routine in a sufficiently successful manner; but it is reserved for him who sees and comprehends *causes*, to originate, to invent, to apply discoveries with judgment. Daily many things occur

which seem to hold in defiance the teachings of experience and the conclusions of wisdom; but these contradictions are rarely more than in seeming, and, when they are otherwise, it is the part of him who, through acquaintance with principles, can trace these new effects to their mysterious sources, to establish new truths or overthrow false deductions. The man of principle is, always and everywhere, the man of power. He who accustoms himself to reason correctly from effects to causes, and to use principles as the foundation of all his judgments, is never deceived and is sure to act as a working-force in the progress of humanity.

You are going into the world especially to mingle with mankind, and your duties in this regard are not the least onerous you will be called upon to assume. Happily, the means of fulfilling them are comparatively simple, and call for no labor or little especial thought from him who remembers that he is simply a gentleman. Still, *professional* intercourse demands some things more than the exercise of ordinary courtesy, and it is my duty to apprise you of them.

First and foremost, then, *be liberal*, in thought and deed, with your professional brethren. Remember that science has no secrets, and that the results of your labors, to be of effect, must be disseminated. It is unmanly—it is not worthy yourselves—it is wrong—to reserve results obtained by labor, thought, discovery or invention, to serve your own selfish ends. The full field of value for any useful idea is not found until it embraces the world.

Consciousness of superiority, either real or assumed, it should be your great effort to entirely repress. “The egotistical assumption of superiority marks superficiality;” and since you disdain pretension in yourselves, so also reject it in others. The schemes of the empiric to attract attention should find neither indulgence in your thoughts or imitation in your conduct. “There are no extenuating circumstances which may justify any man in degrading an honorable calling;” so one of my colleagues once justly said, and I may add that your merits will be more surely and more honorably rewarded by allowing them to be discovered than by making vainglorious exhibition of them. Put forth no wax figures, cases of teeth, glaring signs or advertisements. Such are, in all paths of labor, the devices to which the incompetent or the dishonorable are compelled to resort in order to obtain custom. Neither the public nor the profession will be deceived by any amount of outward show you may make. You will be known by your deeds; therefore take heed that they are such as shall command respect and confidence.

[from *The Sanitarian*.]

## THE FAULTY MENU OF BOARDING-SCHOOLS.

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By H. P. FOWLER, M.D.

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Said a wise physician to me a few months since, "I don't know what to do with my daughters. Thus far they have been taught at home, but now they are old enough to complete their education away from their parents; and I know of no boarding-school, city or country, through which they can pass without coming out invalids. Educational institutions are faulty in a hygienic point of view, one great trouble being here"—tapping his stomach. Having heard the same opinion expressed before by several eminent physicians, and entertaining nearly the same sentiment myself, I was led to investigate still further upon the subject, and have come to the conclusion that this deplorable state of affairs is wholly unnecessary, and, therefore, most blameworthy.

Many persons have an idea that those who do not perform manual labor require but a small quantity of food, and that it is of little or no consequence whether it be of a decidedly nutritious quality. If such misguided individuals had the care of victualing a dozen young Irish women, who were cooks, washerwomen, chambermaids, etc., they would provide an abundant supply of strong, substantial, nutritious food, "for they needed something to work on;" but for a dozen young lady students, "who didn't do anything but study," the menu would be of the lightest, most delicate, most innutritious quality, and in such quantities that Dotheboys', or rather Dothegirls' Hall would instinctively rise to our lips.

This is all wrong; for the brain derives nourishment from what we eat, just as much as do the muscles. Consequently, if proper food be not taken into the system, mental health and strength will be lacking. Cases of inflammation of the stomach, which furnish us with very good instances of semi-starvation, fully illustrate this point. I knew a woman, who, from gastritis, had been able for a long time to take but a very small amount of nourishment. She had previously been a most lovely Christian lady, of more than ordinary intelligence, but now her mind was so weak that she could not grasp the simplest children's stories, and would ask questions that would put to shame a four-year-old. Although she was not, strictly speaking, delirious, she was most of the time talking in an incoherent, confused sort of a way, her conversation

often denoting great distress of mind. Some days she would think her mother was going to die, and would weep most piteously. Another day she would imagine she had committed some dreadful crime, and would hide her head under the bed-clothes and scream and plead for mercy whenever she heard a footstep upon the stair, thinking it was an officer of justice coming to carry her to prison. Her poor mother, with tears in her eyes, one day said, "Oh! that ever a child of mine should be in this dreadful condition. If Mary's body ever should get well, her mind will always be a perfect wreck." "You are very much mistaken, madame," I said; "her brain is feeling the lack of nourishment, just as much as these fingers are (taking up her emaciated hand). When she's able to eat, all her mental faculties will return to her, just as surely as the red, plump flesh will come back to these fingers. Her brain is almost starved to death; that's all the matter with her mind." Her present sound mental, as well as physical health, has fully verified my prediction. This is not an isolated case. Every physician has known such. Some may have even seen complete inanition, where the system, deprived of all food for eight or ten days, insanity or idiocy has preceded the inevitable death. I am not a thorough admirer of Bret Harte. I like him as I do many other writers—in spots; but his description of the physical, particularly the mental condition of the dying men and women in "Starvation Camp," in "Gabrielle Conroy," is wonderfully true to life, and therefore, most admirable and instructive to those not versed in these matters. If, then, the integrity of the brain depends upon what we put into our stomachs, how important it is that our food should be suitable, both in quality and quantity.

The human system is like a cistern, closed on all sides, with the exception of two apertures, one at the top, and the other at the bottom. If water be poured in at the top, the vessel will always be full, even though it be running out at the bottom all of the time, provided the capacity of the egress be no greater than that of the ingress. That is, if as much water runs in as runs out, it will always be full. How few young ladies who leave school are as full vessels as when they entered it. The reason is obvious. More water has run out of them in the shape of hard study and incorrect hygienic habits, than has run into them in the shape of abundant and nutritious food and correct hygienic habits. The inevitable consequence is, the water is low in the cistern. In some cases, the vessel is nearly empty. "Her nerves are all unstrung," the family physician says of one young lady the week after her graduation. "She's very much run down," he pronounces another. "The vim has all been taken out of her," he remarks of a third, etc., etc.

Of course it would be unjust for me to state that *all* educational institutions furnish innutritious and insufficient food; but this I will say, that all boarding-schools with which I have made myself acquainted, are dietetically faulty, and that all students from other schools, of whom I have inquired, give me the same testimony. They are so nearly alike, that one is typical of all. Therefore, I will take for dissection, Miss Smithe's, a first-class boarding-school for young ladies, patronized by the *élite* of all the country round.

The breakfast consists of newly-baked biscuits, made from Haxall flour, butter and coffee. The snowy bread is beautiful to the eye and delicious to the palate, but, being nearly all starch, contains no nourishment, of any consequence, for the brain or muscles. A dog fed exclusively on white flour by Magendie, died in forty days. Dogs fed on sugar exclusively lived nearly as long as those fed upon flour.

Sometimes, instead of, more frequently in addition to, the biscuits, are furnished griddle-cakes made of rice. As rice contains a large proportion of starch, there is the same objection to it as to the white flour. Sometimes appear potatoes, which abound so largely in starch that the ordinary ration of one, for more adventurous spirits two, furnish very little food for the system. Sometimes the young ladies indulge in the luxury of hash, a heterogeneous, conglomerate mixture, wholly unsuited for students, consisting, as it does, of meat, potatoes and greasiness. Of the first-named ingredient I shall speak hereafter. The second I have already vetoed. The third is objectionable, not because it is fatty, as I shall show under Indian corn, but because it is partially-decomposed greasiness. The heating over of the fatty meat has produced a condition which leaves the same relation to rancidity that a smile does to a laugh, and is very apt to derange, if not entirely upset, the stomach. I have heard delicate children complain that hash made them feel sick. Whereupon their elders would say, "Why, you silly children! Yesterday you ate heartily, and without the least inconvenience from the same piece of meat that furnished the hash this morning. So you see it's all your imagination, thinking it makes you feel sick." What a convenient and universal scape-goat for ignorance is imagination.

Poor Nanny! how thy back must ache with the accumulated weight of so many heavy burdens constantly laid upon it.

One day Miss Smithe happened to read an article upon the value of oat-meal to brain-workers, so she resolved to add this cereal to her bill of fare. Accordingly, the next morning there appeared upon the table a small quantity of partially-cooked, lukewarm oatmeal mush, with

nothing in particular to eat upon it. The young ladies tasted it, gave a little genteel sniff of disgust, and turned up their noses as high as was consistent with table etiquette. But as Miss Smithe's eagle eye was upon them, and they were in a good state of discipline, they made a valiant pretense of eating it. A pretense, but that was all. There was one honorable exception, however. Miss C. was a very conscientious girl, and by dint of the most wonderful pluck and self-abnegation (in her veins must have flowed the blood of a hundred martyrs) managed to worry down the small plate full of the sticky, doughy mass, before she broke open the snowy, delicious biscuit. Her facial expression and her whole appearance while performing these two acts, were like the man's who, detained at home from church on a stormy Sunday, forced himself to read two or three chapters in the Bible, before his tender conscience would allow him to cut the leaves of the last new magazines. Every morning the oat-meal mush met with the same reception. But although Miss Smithe could not shut her eyes to the fact that the greater part of it found its way into the hands, or, rather, the buckets, of the "swill men," still her conscience was perfectly easy, for, had she not provided the best of oat-meal for her pupils? and had she not explained to them "its remarkable, yes, young ladies, its wonderful hygienic value"? What more could she do? Moreover, she comforted herself with the thought that she "had an exceedingly aristocratic class of young ladies, who could hardly be expected to like peasants' food"—said reflection being a full-strength belladonna plaster, which many principals of fashionable schools apply to their consciences when they begin to ache a little. "Speedy and complete relief guaranteed in all cases." Miss Smithe's experience was but a ripple of the great tidal oat-meal wave that swept through the country a year or two ago, and resulted in an immense advantage to—the pigs, for into their stomachs the greater part of it went. This is a great pity, for oat-meal takes the first rank among the cereals for brain and muscle-feeding qualities. There were three reasons why oat-meal mush was not eaten by the scholars, and by people at large. It was not properly prepared, there was nothing nice to eat upon it, and it should have been alternated with, and, in some cases, superseded by, oaten bread.

It should be thoroughly cooked, and in a closed vessel, to keep in the osmazome; a farina kettle is excellent. It is not necessary that it should boil all of the time; indeed, steaming seems to break down the minute cells of the grain equally well, perfect amalgamation being a *sine qua non* of good oat-meal mush. It should be served piping hot, and eaten im-

mediately. Ten or fifteen minutes' delay is as fatal to it as to beefsteak. And as to ever eating warmed-over oat-meal, bah ! it's the greatest dietetic abomination imaginable. That cook has not yet been born who can ever restore to it its primitive freshness. Cream is really its only proper sauce, and at one's own table it should always be used. But until the millennium dawn, I do not expect boarding-houses to furnish this luxury. The young ladies may or may not like milk or syrup, but I never knew them to refuse an artificial cream, which is made by beating up eggs very light, pouring slowly over them (stirring the while) hot, but not boiling milk, then setting upon a hot stove until it is of the consistency of thick cream. Three large-dishes of this, one unflavored for those who like the peculiar taste of the oat-meal, and the other two with lemon or vanilla, or some other agreeable essence, should be furnished. But spoon-victuals, although good occasionally, by frequent repetition grow wearisome. I do not really think God intended man to be a mush-eating animal, for I have noticed all the people whom I see are furnished, more or less, with teeth. Therefore, allow me to introduce to you my model oaten bread, of which we are charitable enough to think Miss Smithe never heard. It is made of oat-*flour*, which is oat-meal ground as fine as Haxall flour, and should be used for bread, wafers and biscuits instead of the oat-*meal* which is usually employed for that purpose.

I never ate any oat-*meal* productions that were not full of little kernels of the dried grain, that had been rendered as hard by baking as particles of uncooked rice. This condition makes their digestion and assimilation an impossibility, passing through the alimentary canal unchanged, without nourishing the system at all. The ends, also, are so sharp, that they are very liable to irritate the stomach and bowels, and even to stick into the intestines. The Scotch sometimes suffer from this painful and often dangerous disease. Of course this difficulty is entirely obviated by using oat-*flour*. I wonder that this fine oaten bread is not generally eaten (I rarely see it, except at my own table); for, besides being exceedingly nutritious, it is really delicious, having a rich, nutty taste that no bolted flour ever possesses. S. G. Bowdlear & Co., 194 State Street, Boston, keep it always for sale in its highest degree of excellence.

The same may be said of all the known and unknown cereals. Indeed, a tour through their store is enough to make a vegetarian go wild with delight—so great is the variety, and so sweet and fresh and nice are all their goods.

As oat-*flour* contains no gluten, if used alone it cannot be vesiculated and made into bread, hard cakes being its only mode of administration;

therefore it requires the addition of bolted or unbolted flour. If the latter is used, it will be more nutritious than if the former were employed; but the oat-flour will lose somewhat of its individuality, for, as the flavor of the wheat is fully as strong as that of the oats, the taste will be decidedly mixed, although it is no less enjoyable on that account.

Next in value, as regards general consumption the year round, comes unbolted flour bread. The finer varieties of the Graham meal, or "the cold air attrition whole wheat flour," are suitable for this purpose. If wheaten mush is desired, pearl wheat is good; but crushed and cracked wheat are too coarse and scratchy for the delicate mucous membrane of the alimentary canal. If constipation exist, the seeds of the fig, by reason of their smoothness, are much safer. Still, we need the silex contained in the husk for the enamel of our teeth, our finger-nails and our hair. But this, as well as the lime, etc., contained in the darker portion of the grain, is all included in "the cold air attrition whole wheat flour" (its long name is the only bad thing about it), but is excluded from the white flour, which is the reason that not only do our brains and muscles suffer, but our teeth. It is the universal opinion among the most scientific of our dentists, that one great cause of decay of the teeth is the consumption of fine wheat flour. Snowy biscuits and porcelain teeth go hand in hand. The "steam-cooked cereals" furnish excellent breakfast dishes, being made for the special accommodation of sleepy-headed servants. For, as the greater part of the cooking has previously been done by steam, only twenty minutes or half an hour (don't believe the wrapper, which, I think, says ten minutes) are required in the morning. Nearly the same result may be obtained by soaking oat-meal over night *à la* rice. The barley part of the steam-cooked wheat and barley will be fully appreciated by those unfortunates who have ever tried to cook pearl barley by any common or uncommon domestic method; for it seems to be proof against the softening effect of steaming and boiling.

Then we have Indian corn meal, which makes excellent bread, owing to the large amount of oil which it contains; in hot weather it should be used very sparingly, if at all. The white Southern meal, which is nitrogenous and phosphatic, but only slightly carbonaceous, should be substituted for it. It can be eaten either in the form of hominy mush, or bread made from the flour. Indian corn meal is good food for students in two ways. First, it is moderately phosphatic, although it falls far below oat-meal in this respect; but, secondly, this deficiency is made up by its being the most carbonaceous of all the cereals. It is the

most fattening article of vegetable diet known, the famous "*foie gras*" being produced by its consumption. The great demand among epicures for this tidbit, shows conclusively that all the geese do not reside in Strasbourg; for the fatty liver cannot be healthful, when the goose is kept for weeks in a dark cellar, in a coop too small for it to move about at all, and crammed with Indian meal. The Moorish gentlemen are so fond of "moon-faced" (very fat) wives, that, through the empire of Morocco, in nearly every village, there are people who follow professionally the business of fattening young ladies for the matrimonial market of Barbary, the *modus operandi* being excessive inactivity, and the cramming down the girl's throat Indian meal porridge, mixed with grease. Ladies who are sighing for *embonpoint* should make a note of this. By reason of its being the most carbonaceous of all the cereals, it affords a great amount of nourishment to the nervous system, as the brain and spinal cord are composed largely of fat. The fact that phosphorus is found in the brain has been industriously circulated by many popular medical magazines of late, and valuable dietetic hints therefrom deduced. But the equally important one of the nerve centres being largely composed of fat, seems to have been either unrecognized or overlooked in the dissemination of useful knowledge. This is the reason why fat people are very rarely, if ever, "nervous." "Fat and easy," "fat and good-natured," are synonyms. A person may be large and bulky from dropsical tendencies, and still be fussy, fidgety and irritable. By fat, I do not mean white, bloated, diseased flesh; but firm, red, beefy fat—flesh that Hawthorne would have said "would cut up well." I think, as a general thing, parents and teachers are too much afraid of letting their children eat fatty foods. The consequence often is, a physician's prescription for cod-liver oil. The butter on Miss Smithe's breakfast table is very nice indeed. The only trouble is, there is not enough of it, the young ladies not being expected to partake very largely. This is a great mistake. For one-twelfth of its weight is a sulphureted oil, called Lecithin—a very peculiar substance, found largely in the brain and spinal cord. So do not spare the butter, young ladies. The only caution necessary, in regard to fats, is, beware of rancidity.

Brown bread comes next in our list. Not the English brown bread, which is our Graham bread, but the New England brown bread, that invariable accompaniment of baked beans. It is made of Indian and rye meal, and can be procured at the baker's. As rye is very nutritious, it is good food, if one's stomach can digest it; but as this cereal has such active fermentative power (it is used more by distillers than any other

grain), it is much more apt to "turn sour in the stomach" than the other breads here mentioned.

And now for the beverages. Were Miss Smithe's coffee in the morning and tea at night of the same strength that one drinks at his own table, I should utter a fierce protest against them, as being too exciting to the nervous system; but I consider it entirely unnecessary so to do, as the color, taste and smell of the tea and coffee are so faint, as to tempt one to ask if the tea-chest and coffee-bag cannot be floated through the water again. How very nice it is that teachers, particularly of private boarding-schools, where the pecuniary matters are in their own hands, should have such very correct hygienic views upon these points; how very touching it is to see their tender solicitude for the health of their pupils (evinced by filling each cup four-fifths full of hot water before putting in the tea, the two spoonfuls of milk, and half a spoonful of sugar).

"Strong tea and coffee, young ladies, are exceedingly injurious. The best physicians in the country fully agree upon this point." But as in the moral, so in the dietetic world: a negative evil is blameworthy, when it takes the place that a positive good should occupy. Students should fill their stomachs with something more nutritious than slightly perfumed water with a dash of milk in it; chocolate should be substituted for this supposititious tea and coffee, as it not only contains highly nutritious qualities, but acts as a sedative, rather than otherwise, upon the nervous system. It should be made of clear, unskimmed milk, with no admixture of water, and should then be regarded as food, which it really is. Milk is exceedingly healthful, and with eggs is the only perfect natural article of food—*i. e.*, they both possess the nitrogenous, phosphatic and carbonaceous element in exactly the right proportions to ensure perfect health of mind and body. Every young lady student should think that she had fallen far short of her duty, if she does not eat two coffee-cupfuls, or more, if her stomach can digest it, of this milk chocolate, and two or three slices, or more, of one of the kinds of bread here mentioned, or mush, and a liberal supply of butter. With this food the brain will be well nourished, and well able to endure the three or four hours' hard study before dinner. Sometimes, for variety, let the chocolate be made in large open kettles, in which, after having been thickened with egg, *à la* artificial cream, dip the browned slices of bread, and serve as toast, not upon the ordinary breakfast dishes, but in large soup plates, which will hold a pint of the chocolate. I have just breakfasted upon this, and found it delicious.

The dinner at Miss Smithe's consists of one, rarely two kinds of meat, one, often two or three kinds of vegetables, with pudding or pie for dessert ; on Fridays, fish or oysters. And now I am about to utter a most heterodox sentiment, and one which I feel sure will shock and horrify the majority of my readers. But I make it boldly, confident that it is correct. It is this: *Meat should be eaten very sparingly, if at all, by all brain-workers, for the plain and simple reason that it is too stimulating to the brain.* "Prove it," cries beef-eater. In the *Lancet*, vol. I, page 186 (1869), we read: "A bear kept at the Anatomical Museum of Glessen showed a quiet, gentle nature as long as he was fed exclusively on bread; but a few days' feeding on meat made him vicious, and even quite dangerous. That swine grow irascible by having flesh food given them is well known—so much so, indeed, that they will then attack men." Those who have kept a watch-dog know that he is much more fierce and liable to attack burglars, if he is fed exclusively upon meat, than upon a vegetable diet. In "Experimental Researches on the Food of Animals," page 24, London, Doctor Dundas Thompson quotes a narrative of the effects of a repast of meat on some native Indians, whose customary fare, as is usual amongst the tribe, had consisted only of vegetable food. "They dined most luxuriously, stuffing themselves as if they were never to eat again. After an hour or two, to his (the traveler's) great surprise and amusement, the expression of their countenances, their jabbering and gesticulations, showed clearly that the feast had produced the same effect as any intoxicating spirit or drug. The second treat was attended with the same result."

In "Transactions of the Obstetrical Society," Vol. III, 1861, page 143, Dr. Druitt, in describing the properties of a liquid essence of beef, which had been prepared according to his own instructions, speaks of it as exerting a rapid and remarkable stimulating power over the brain, and introduced it to notice as an auxiliary to and partial substitute for brandy, in all cases of great exhaustion or weakness, attended with cerebral depression or despondency. Correspondingly stimulating properties have also been recognized as an effect of the copious employment of Liebig's Extractum Carnis. No less an authority than Pavy (F. W.) pronounces this beef-tea scarcely an article of nutrition, its restorative powers being due to its stimulating effects upon the brain. The great German chemist has certainly been very successful in extracting the stimulating without the nutritious qualities from meat. Now, if he would only reverse the order of things, and tell us how to extract the nutritious without the stimulating properties from a piece of beefsteak

or roast beef (for meat in its solid form, as eaten by well people, unlike beef-tea, is highly nutritious), he would confer a great boon upon mankind. Again, when a man is stricken by paralysis (one of the most formidable of brain diseases), what does the wise physician say? "You must eat no meat; it is altogether too exciting to the brain." It is the best, and sometimes almost the only thing, that can be done for the sick man now; but it is like "locking the barn-door after the horse is stolen," for very rarely, if ever, does he regain his former health and vigor. There are hundreds of men, this moment, in New York—clergymen, active business men, lawyers, authors, students—all brain-workers, who are living high-pressure lives, and eating meat two, and perhaps, sometimes, three times a day, and who, *on account of this marriage of excipients*, are doomed, sooner or later, to be laid upon the shelf, either from paralysis or general break-down of the nervous system, or some mental or nervous disease. If they were coal-heavers, truck-men, omnibus-drivers, etc., etc., I do not think they would be in danger, for I am not a vegetarian.

Those who perform manual labor, or those who do not work at all, either with hand or brain, provided they do not lead very inactive lives, or do not possess a very sensitive nervous organization, can eat meat during cool and cold weather with impunity. Although the cases are very few in which its consumption is a *sine qua non* to the maintenance of perfect health and strength, still, as it is a very enjoyable article of diet, and we all like to gratify our palates, it may safely be eaten by many people. Individual cases prove but little; still, I will state that I knew of a professor in a medical college, a surgeon, who was obliged to relinquish the use of meat because it made him too nervous to perform surgical operations before the students. It has an equally marked, although dissimilar effect upon myself, producing such distressing insomnia (sleeplessness), that I have not eaten meat, of any consequence, for years. My experience and observations show that in many cases of insomnia, not dependent upon other diseases, there is so strong a probability that meat is causing all the mischief, that its relinquishment should be insisted upon by the attending physician before resorting to sedative or narcotic drugs.

So greatly conducive to irritability of the nervous system is meat, especially beef, that among its minor evils may be reckoned the weeping over lessons, the fractiousness, the petulance, the hysterical laughing and crying, the low spirits, excessive home-sickness, etc., etc., which appear to be the usual accompaniments of boarding-school life. This is

lamentable. Whenever I see a school of young ladies afflicted with "nervousness," it reminds me of a beautiful garden of roses infested with mosquitoes. It always requires considerable moral courage on the part of the medical attendant to prohibit the free use of meat, except in cases of very grave nervous disease, like paralysis, etc.; for it seems to be the universal opinion that the butcher's cart and the meat market are the only barriers between mankind and death. This is not so—provided food equally nutritious is substituted for it. If meat should be taken away from Miss Smithe's bill of fare an immense loss would be felt, for it is the only really nutritious article of food upon the table. But I insist upon the free use of all the cereals, vegetables, fruits, chocolate, milk, butter, cheese (which three last articles a consistent vegetarian would include under "animal food," for which reason I have not used this term when I meant meat), eggs (also animal food), and fish, the two last being substituted for meat. Eggs, ounce for ounce, pound for pound, are fully equal to the best butcher's meat in nitrogenous (muscle-feeding), phosphatic (nerve and brain feeding), and carbonaceous (fat-producing) properties. The yolk of the egg is particularly rich in food for the nervous system, containing, as it does, a phosphureted oil named Lecithin, which abounds in the brain and nerves. Some good physicians are of the opinion that fish is as nutritious as meat, while others think that it is not. In "The Angler and His Friend," by John Davy, M.D., F.R.S., London, page 114, Dr. Davy says: "If we give our attention to classed people, we shall find that the ichthyophagous (fish-eating) are especially strong, healthy, and prolific. In no other class than in that of fishers do we see larger families, handsomer women, or more robust and active men." My experience and observation, which does not necessarily clash with his, goes to demonstrate that when hard manual labor is required, one must eat a *larger quantity* of fish than he would of meat, showing that the latter is more highly concentrated nutriment than the former. But this deficiency in its muscle-feeding power is obviously no drawback to its use by the student, as it is very rich in brain and nerve-feeding qualities. Indeed, with its unstimulating, moderately nitrogenous and abundantly phosphatic properties, it is the best possible food for all brain-workers. Years ago I remember reading a curious poem upon a miser, wherein he was represented as reading by the light of a half-putrid fish's head to save the expense of a candle. It made quite an impression upon my childish mind; but I had not thought of it since, until the other evening when I was walking in my garden in the dark, I saw under a bush what appeared to be a mammoth glow-worm, but

upon investigation with the toe of my boot proved to be a putrescent fish's head. So bright and luminous was it, that I could distinctly see what time it was by my watch; and nothing but its intolerable stench prevented me from taking it in my hand, and reading, *à la miser*, the evening's paper. Instead, I picked up the loathsome thing in a rhubarb leaf, and threw it over my neighbor's fence. They keep a cat—a beautiful, sleek, rose-colored, fish-loving, chicken-stealing Thomas! It was but a small thing to do—a very small thing!—but these little acts of neighborly kindness and generosity are so sweet and refreshing in this hard, selfish world of ours! What should I do if I lived only for myself!

Want of space forbids my discussing the different varieties of fish, and their moods of cooking. Passing on to the dessert, pie should be expunged from Miss Smithe's bill of fare. It is unwholesome for the same reason that hash is, the butter, lard, or whatever fat is used for shortening, having undergone, by reason of the baking, that inevitable change which renders it half rancid. We are a pie-eating people, and from this bad habit arises much of our dyspepsia and consequent misery. "Hygienic pies" can be made by covering them with a crust constructed of oat-flour, or Graham flour, mixed with water; but for general consumption puddings are preferable. I would like to linger upon this toothsome article of diet, for it is quite a hobby of mine, but want of time forbids. Marian Harland, in "Common Sense in the Household," will tell you all about them. This popular cook-book, in the main, is good and reliable; but she has made one great mistake, not dietetic, however, which I have never seen corrected, although it may have been. In her chapter on servants, page 370, she speaks of a book which she once read, entitled "The Greatest Plague of Life." She says: "I have forgotten who wrote it, if I ever knew"; on the next page she adds: "Douglas Jerrold wrote that book, interrupted a friend at my elbow." This is not so. The book is this moment lying on the table before me, and from its bearing the same title, and having the same characters, to which she has given a half-page description, there can be no doubt that the two books are identical. It was written by "The Mayhew Brothers," London. I own another book, by the same authors, "The Image of his Father; or, One Boy is more Trouble than a Dozen Girls," which is certainly the most curious, witty and entertaining book I ever read. They also wrote "How to get Married," and "Shabby Genteel," and probably other works.

It seems strange that these authors should not have been better known on this side of the water. "The Image of his Father" came out in 1848,

and "The Greatest Plague of Life" some little time before. A short time since I lent the first-named book to a man who had just undergone a severe surgical operation, and he was so much interested and delighted with it, that he kept his wife reading it to him all of the time, to the great diversion of his mind, and consequent good. There is nothing so beneficial to a sick person as a little fun ; and I really think it would be a good plan to have an American reprint of this work—a physicians' edition—on purpose for the medical profession to lend their patients. Miss Smithe's tea consists of Haxall-flour bread, butter, tea, cake, and often baked or preserved fruits. Of the first three, I have already spoken. Cake should be expunged for the same reason as pie. Vegetables (for dinner), and fruit, for any or all the meals, may be eaten. I should like to ventilate my ideas upon several faulty habits of the young ladies before, at and after meals, but I refrain ; for if a doctor, the first time he visits a patient, gives him a very large and nauseous dose of medicine, he is not so likely to be sent for again. So no more at present.

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[From The Dental Register.]

## THE DEVELOPMENT OF DENTINE.

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By C. SIHLER, M.D., Fellow in Biology, John Hopkins University.

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The view then at which I have arrived, after investigating the dead and living dentine, as to the structure of this tissue, is, 1st, the essential parts of the living and growing dentine, the oval elements or pink bodies attached to the opening with their nuclei of the dentinal canals, and in direct connection with the dentine. 2nd. There can be recognized in this tissue the dentine, as can elsewhere the germinal matter or bioplasm and the formed matter. The former has been pointed out by the staining, and has been shown that it exists in the dentinal canals, the odontoblasts and their nuclei. The latter, *i. e.*, the formed matter, we have shown to consist of two kinds of substances, by the aid of muriatic acid: First, a homogeneous one in which the lime-salts are infiltrated, a second one, of the nature of yellow elastic tissue substance, making up the walls of the dentinal tubules, and being in continuity with the odontoblasts. That it is prolonged into (or on) bioplast, we have shown by isolating an odontoblast while in connection with the dentinal tubules, and that this process of the odontoblast is not altogether germinal mat-

ter or merely a semi-fluid soft mass, can be proved by the stretching it will permit. Where the germinal matter ends, and the formed matter begins, is just as difficult at times to say, as where day ends and night begins, for one must always bear in mind in using this term, that the distinction made between forming substance or bioplasm, or germinal matter, and formed matter, is a termination not made according to the idea (category) of form and appearance or locality, but according to the idea of force or substance. Hence, we may have particles of formed matter and particles of germinal matter mixed up. The body of the odontoblast and the material in the dentinal tubules seem to me to be of this nature, *i. e.*, mixed, while the nucleus seems to me to be active bioplasm. In making histological investigations, one must not forget that one is interrupting nature and interfering with processes. I look upon the odontoblasts as though here the germinal matter was being converted into formed matter, and was being separated into the elastic material, which, when condensed, will make up the walls of the tubes and side tubes—and into the homogeneous glue-like substance making the general matrix of the dentine, and I look upon the contents of the dentinal tubes which can be stained, as upon germinal matter where change into formed matter is slowly going on, while the nucleus, I consider, as the agent which converts pabulum or food into germinal matter.

This view in the structure of dentine will agree with that of Beale, if Beale will admit that there is a special wall to the dentinal canal, which is a direct production of the germinal matter, as the fibre of the ligamentum nuchae is a production of the bioplasts attached to them, and which is made *pari passu* with the general glue-like matrix of the dentine.

This view will agree with that of Salter, if Salter will call his "thick fluid" in the dentinal canals germinal matter, and admit that he does not prove the calcification of the dentinal tubes.

This view will agree with that of Waldeyer, if Waldeyer admits that his dentinal sheaths and the fibres which he describes as possessing a remarkable elasticity, are one and the same thing.

This view will agree with that of Koelliker, if Koelliker admits that his dentinal tubules (Neumann's sheaths) and his processes of the odontoblasts are one and the same thing.

This view will agree with that of Tomes, if Tomes will admit that he fails to prove that there is a dentinal tubule, and admit further that his soft fibril is one and the same thing with the dentinal tubule.

These three views will agree with mine, if they will allow me to call

the contents or inner portion of their soft fibril bioplasm—if they allow me to call the outer portion of their fibril the dentinal tubule, and the material which according to their own statements can be stretched so much—yellow elastic tissue substance.

But I will quote the authors themselves, and try to point out where and why I am not convinced by their arguments. Tomes says: “I had, however, but little expectation of finding that one of the most important points in dental structure had been overlooked, namely that each dentinal tube is permanently tenanted by a soft fibril, which, after passing from the pulp into the tube, follows its ramifications. With proper care in manipulating, nothing is more easy than to demonstrate the existence of the dentinal fibres in any tooth which has recently been extracted. If a thin section be made in a plane parallel with the direction of the tubes and the sections be afterward torn in a direction transverse to that of the tubes, many of the fibrils will be seen projecting from the torn edges. It is desirable in repeating the experiment to place the decalcified section upon a slide before turning, as in moving it from the surface upon which it has been torn, some of the longer fibrils may be folded back upon the body of the specimen, and thus become obscured from view. Where the separation between the torn surfaces has been but slight, we may often see a fibril unbroken stretching across the interval, which separates the orifices of the tubes to which it belongs.

“In order to demonstrate the connection of the fibrils with the pulp, fine sections should be made with a sharp knife from the edge of the pulp cavity. In this manner I obtained the specimen from which Mr. DeMorgan has been kind enough to draw an illustration, showing the fibrils stretching from the pulps to the displaced dentine, and some of them passing out on the other side of the fragment. That the fibrils proceed from the pulp may be seen by carefully fracturing a fresh tooth with as little displacement of the fractured parts as possible, and then by slowly removing the pulp from its place in the tooth, we shall be enabled to examine the fibrils which have been drawn out from the tubes. By this procedure some of the fibrils will be withdrawn from their normal position in the dentine in the greater part of their length, a few of them retaining short lengths of their branches, but sufficiently long to show that they have come from the branches of the dentinal tube.”

These same arguments, it will be noticed, we have used above in proving the presence of the dentinal tubule, and have found the same appearance in dead teeth. We have seen, when describing the nature

of the dead and dry dentine, that a tubule and a fibril cannot be distinguished one from another by merely being seen, especially along their sides. Further, we have shown that by decalcifying, the fibrils apparently drawn out from the dentinal canal (I do not say tubes) are identical with the tubes themselves, and all the phenomena described by Tomes can be produced by tubules as well as by fibrils.

Tomes quotes Koelliker, who gives facts supporting our view, but I fail to see that Tomes either sees the point or refutes it. He quotes the following, viz.:

“Prof. Koelliker, in his account of the development of dentine, describes and figures processes extending from the peripheral cells of the dentinal pulp in developing teeth, but he does not recognize the tube fibril; indeed he, as before cited, describes the tubes as filled with fluid. Mr. Lent, in a paper published in 1855, gives a similar description to that published by Mr. Koelliker, and says that the cell fibres are but seen in teeth which are but little advanced in development. Mr. Huxley states that in a solitary instance he observed a fibre pass a short distance into the dentine.”

“Both, Mr. Koelliker and Lent, regard the processes which they observed extending from the peripheral cells of the pulp in forming teeth, as organisms for the development of the dentinal tubes. The latter author, near the conclusion of his article on the development of dentine, states that the processes of the cells are the dentinal tubes. He observes further on that the fact first observed by Mueller, and then by Koelliker, that the dentinal tubules possess separate walls, which can readily be isolated and explained by the history of the development—the wall of the dentinal canal is identical with the cellular membrane of the ivory cell.”

If any one else understands why Tomes quotes Koelliker, he accomplishes more than I can. To me it appears that this quotation might have shown to Tomes that it is impossible to recognize his soft fibril; that the arguments given to support it will support Koelliker's and Lent's views a good deal better than his own.

Salter takes the same views of Tomes' soft fibrils. We can, in giving his criticism, at the same time get Salter's view of the nature of dentine. He says—viz.:

“Dentine or ivory, which constitutes the hulk of the tooth, is a tissue of bony hardness; it consists of earthy matter to the extent of not less than three-fourths of its weight. Histologically, it is composed of a series of minute tubes about 1-9000 of an inch in diameter, radiating

from the central hollow chamber or pulp cavity, in which is lodged the soft vascular organ, the pulp, which is mainly concerned in the nutrition of the teeth. Between the dentinal tubes is a hyaline structure called the intertubular tissue. The tubes pursue a wavy course, and branch more or less, especially in the crowns of the teeth near the surface, and occasionally they exhibit dilatations somewhat like bone lacunæ.

The dentinal tubes have extremely thin walls, which can scarcely be said to be visible in the hard tissues when seen in profile, but which in transverse section, as viewed by high powers of the microscope, display a broad, brilliant ring of considerable thickness around each. The appearance is an optical illusion, and has given rise to much error in interpreting the histological elements of dentine. Whether the broad ring is the result of the curious phenomenon of irradiation or the diffraction of light by the thin cut edge of the tube, I am not prepared to say. But the appearance is not without parallels, which are thus explained. This fact was first pointed out by Henle, in 1841, and is easy of confirmation. It can be demonstrated both by analysis and by synthesis. In some fractures of sections of dentine, their fine tubes are seen standing out rigid and calcified from the broken edge. The animal basis of the dentinal tubes and that of the intertubular substance are different. The former is considerably denser, and after decalcification strong hydrochloric acid will remove the intertubular substance, or render it absolutely transparent; thus the tubes can be isolated, and their minute diameter, corresponding with the dark dentinal tube, as seen in profile view of hard sections, is at once recognized. If tubes thus distinctly free from all surrounding walls be traced along their course, occasionally some are seen turning their broken edge towards the observer when the rings in question are apparent and the ill-union is manifest.

Synthetically, this question of histology is demonstrated with equal clearness. In studying the development of dentine, it is found that upon the formative pulp there is arranged a series of columnar cells, constituting the membrane eboris, from the dentinal extremity of which minute tubular threads project, and as the dentine forms from without inwards, these are prolonged centripetally, a homogeneous blastema separating them, and being calcified with them. No other elements hitherto discovered enter into the formation of the dentine, and the minute tubes freed by the decalcification and the solution of the intertubular tissue in dentine, through the action of hydrochloric acid, are identical with the thread-like prolongation seen on the ends of the columnar cells of the dentinal pulp. These minute tubules of dentine, when free and soft,

have a certain resemblance to nerve fibres, and this circumstance, combined with the belief that the luminous rings around the tubes represent the walls of comparatively large hollow canals, has led a distinguished microscopist to conclude that they are nerves occupying the cavities of such canals; and unaware that the histological facts had been recorded, both in description and illustration, by Henle long previously, he presented to the Royal Society a memoir on the presence of fibrils of soft tissue in the dentinal tubes, "and in that memoir he speaks of them as organs of sensation. But the truth is that they are the dentinal tubes themselves, and there is nothing whatever separating the bodies from the inter-tubular substance. In the observations made by this author, great stress was laid upon the examinations being made on perfectly fresh specimens, so that the soft structures may not have suffered injury or decay. The minute tubules may, however, be demonstrated just as well in the oldest specimen of dentine. I have a specimen prepared by myself of a portion of decalcified dentine from the tooth of an ancient Briton that had been entombed, probably, for not less than 2,000 years. All soft, uncalcified tissues must have perished for ages."

"The dentinal tubes are hollow, and appear to contain a dense fluid plasma, and further on, the axis of the tube, therefore, whatever may be its disputed nature, being occupied by a fluid."

So far Salter; and I will say that I agree with his arguments, against the views of Tomes, but have to remonstrate as regards a few statements. I am by no means convinced that the dentinal tubule is calcified; there is no proof given, and from the very nature of the material of which the elastic tissue is composed, I think it must be uncalcified. As far as 2,000 years are concerned, time is nothing; and we know that muriatic acid speedily dissolves the homogeneous matrix, and for quite a time seems powerless against the tubes. And, further, the very existence of a tooth speaks for the possibility of the presence of the yellow elastic, which can stand certainly more acid and alkalies than the glue or intertubular matrix of dentine, and if it can stand more of chemical action, why not more time? The lime-salts are not such powerful preservers. I must object to simply calling the contents of the tubes fluid, dense plasma, and to saying, after describing the tubes and intertubular substances, "no other element enters, etc." That is reasoning just as if one did not recognize the nucleus in a liver cell, or the connective tissue corpuscle in fibrous tissue, or the nuclei in muscle and nerve. As far as the description of the formation of dentine is concerned, it is good enough, as far as it goes, but does not mention the formation of the side tubes.

But Tomes gives some other facts, some of which Salter also quotes, which are of importance. He says, if a fibril be examined in its natural condition by the aid of a  $\frac{1}{8}$  object glass, it will be found to consist of an almost structureless tissue, transparent, and of a comparatively low refractive power. In glycerine the fibrils are scarcely visible. At present it admits of doubt whether they are tubular or solid. In some cases there is an appearance of tubularity, but being cylindrical, this may be a mere optical effect. When accidentally stretched between two fragments of dentine, the diameter of the fibril becomes much diminished, and when broken across, a minute globule of transparent but dense fluid may sometimes be seen at the broken end, gathered into a more or less spherical form. These appearances may be explained by assuming that the fibril consists of a sheath, containing a semi-fluid matter similar to the white fibrillæ of nerves, etc."

It is somewhat surprising to see Tomes calling a thing which can be stretched so much as it can, and of diameter which is diminished by stretching, and which seems to contain a dense fluid—a soft fibril. The trouble with Tomes' description of dentine is, that at first he assumes the dentinal tubes, then, when he comes across them in reality, he takes them for something else—namely, fibrils. I think it will be noticed that his dense fluid in his soft fibrils corresponds to the germinal matter in the tubes, his soft fibrils, or, more accurately, the outer dense portions of his fibril, are our dentinal tubes.

*(To be Continued.)*

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## NOTES.

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### Connecticut Valley Dental Society.

The Fourteenth Annual Meeting of this Society was held at Springfield, Mass., October 23d and 24th.

The following officers were elected for the year ensuing, to wit:

President, L. C. Taylor, of Hartford, Conn. Vice-Presidents, J. H. Smith, New Haven, and C. S. Hurlbut, Spring-

field. Secretary, C. T. Stockwell, Springfield; Assistant Secretary, D. H. Smith, Holyoke. Treasurer, N. Morgan, Springfield. Executive Committee, Geo. H. Parmele, Hartford; H. M. Miller, Westfield; L. Noble, Springfield.

The following papers were read and discussed, to wit: "The Laboratory," by Dr. P. H. Derby, of Springfield; "Caries and Necrosis of the Maxilla," by Wm.

Lester, M.D., of South Hadley; "Prevention of Cruelty to Patients," by Dr. J. F. Adams, of Worcester; "Status of Dentistry in Europe," by Dr. W. H. Jones, of Northampton; "Theory and Practice," by Dr. F. Searle, of Springfield; "Nutrition," by Prof. L. D. Shepard, of Boston, and "Reminiscences of Mechanical Dentistry during a period of Thirty-two Years," by Dr. J. Beals, of Greenfield.

The time and place of the next semi-annual meeting was referred to the Executive Committee.

C. T. STOCKWELL, *Secretary.*

*Springfield, Mass., Nov. 2d, 1877.*

#### Meeting of the Ohio State Dental Society.

The Twelfth Annual Meeting of this Society will be held at Columbus, O., in the State House, Wednesday, December 5th, 1877, commencing at ten o'clock, A. M., and continuing its session three days.

I. WILLIAMS, *President.*

A. F. EMMINGER, *Cor. Secretary.*

SUBJECTS FOR DISCUSSION.—1st. Influence of diseased teeth on other and remote organs.

2d. Sanitary treatment of teeth: therapeutic agents especially applicable in dental practice; their properties and uses.

3d. Lancing the gums during first dentition: is the operation called for? If so, how should it be performed?

4th. Mechanical dentistry.

5th. Modes of manipulating gold in filling teeth.

6th. Abrasion of the teeth: sensitiveness of the necks; causes and treatment.

F. H. REHWINKEL,

J. H. WARNER,

R. H. BOAL,

*Executive Committee.*

THE STATE BOARD OF DENTAL EXAMINERS will occupy rooms at American Hotel, and hold its sessions in rooms 81 and 82, commencing Tuesday, the 4th day

of December, 1877, at twelve o'clock, M. Candidates for examination will please take notice.

J. TAFT, *President of Board.*

W. P. HORTON, *Secretary.*

#### A Good Cheap Paste.

A good cheap paste, that will not ferment in warm weather, and which contains no poisonous substance. It makes a paste similar to that used on postage stamps and gummed labels, and is vastly superior to tragacanth, acacia, or flour paste, for ordinary use: Dextrine, 2 ounces; acetic acid and alcohol, of each 4 drachms; water, 2½ ounces.

Mix the dextrine, acetic acid and water, stirring until thoroughly mixed; then add the alcohol.

#### Salt for the Throat.

An exchange says: "In these days when diseases of the throat prevail, and particularly a dry, hacking cough, which is not only distressing to ourselves, but to those with whom we are brought into contact, those thus afflicted may be benefited by trying the following remedy: Last fall we were induced to try what virtue there was in common salt. We put a teaspoonful in about half a tumbler of cold water, and with this we gargled the throat most effectually just before meal-time. The result has been that during the winter we were not only free from the usual coughs and colds to which, as far as our memory extends, we have always been subject, but the dry, hacking cough has entirely disappeared. We attribute it entirely to the salt gargle, and do most cordially recommend it to those of our readers who are subject to diseases of the throat."

DR. RUMBOLD says: "If there is foetor from the feet, salicylic acid and bromide of potassium, of each five grains to one ounce of 'vaseline,' will, in a few bathings and anointings, correct this condition."

JOHNSTONS'

# Dental Miscellany.

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VOL. IV.—DECEMBER, 1877.—No. 48.

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## OBTURATORS, ANCIENT AND MODERN.

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By N. W. KINGSLEY.

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(*Continued.*)

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We come now to the consideration of the most scientific *obturator* which has ever been applied to natural deformities.\*

In all the cases described in the foregoing pages, the instruments were constructed for, and applicable to, accidental lesions only. Whenever a case of congenital fissure presented itself, and any really scientific effort was made to supply the functions of the undeveloped organs, it was by an attempt at an artificial velum—Snell and Stearn both claiming complete success in such cases, not by an obturator, but by a flexible elastic velum. According to the theory followed by them of expecting articulate speech to result only from the same muscular activity as with perfectly developed organs, it would be impossible for the same kind of utterance to follow from a totally different kind of an organ. Hence, the natural velum, being of a very elastic character and an important organ of speech, it was not deemed possible for the function of speech, destroyed by its absence, to be restored by any appliance that did not resemble the natural organ in the important characteristics of elasticity and flexibility.

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\*The author is not prepared to admit that this obturator is the most scientific *instrument* for congenital fissure; but, keeping up the distinction between obturators and vela, it is the most perfect *obturator*.

The idea was lost sight of that the function of speech was not a natural function, like digestion or respiration, but a function acquired by the education of certain muscles, which were trained to produce such effects; and consequently, if the power of certain muscles were destroyed, it might be possible to train other muscles to new uses and produce similar effects.

It could only be in accordance with this last suggestion that an obturator could be of benefit to articulation in a congenital fissure of the palate.

In 1867 Dr. Wilhelm Suerson described before the Central Association of German Dentists, at Hamburg, his method of constructing obturators, in which he pronounced a principle in the mechanism of speech with an artificial organ which had never before been advanced. From a report of his lecture in the *American Journal of Dental Science*, for December, 1867, I make the following extract:

“In order to be able to pronounce all letters distinctly, it is accordingly necessary (besides other conditions, which are far away from our present subject) to separate the cavity of the mouth from the cavity of the nose by means of muscular motion.

“That separation is, under normal conditions, effected, on the one hand, by the velum palati, which strains itself (consequently by the levator and tensor palati); but on the other hand, also, by a muscle which, to my knowledge, has, in connection with these operations, not yet received a sufficient amount of attention—I mean the *constrictor pharyngeus superior*. This muscle contracts itself, during the utterance of every letter pronounced without a nasal sound, just as the levator palati does. The constrictor muscle contracts the cavum pharyngo-palatinum, the pharynx wall bulging out—and it is chiefly on the action of this muscle that I base the system of my artificial palates.

“These palates, which in all their parts are made of hard caoutchouc, consist of a teeth plate suitably attached to existing teeth, and which, at the same time, covers the fissure in the hard palate (if such a fissure exists). Where the fissure commences in the velum, that plate terminates in an apophysis broad enough for filling up the defect. This apophysis is at the same time of such thickness as to keep up a contact between the high edges forming the sides of the apophysis and the two halves of the velum, even when the levator palati is in activity. To bring about this contact the more surely, the high edges forming the sides do not rise straight, but obliquely, towards the outside.

“The lower surface of the apophysis, turned towards the mouth, lies on

about an equal level with the velum, *if the latter is raised by the levator palati*. But when the velum hangs loosely downwards, the back part of the artificial palate is lying over it. This back part, accordingly, fills up the cavum pharyngo-palatinum, and in such a manner as not to impede the entrance of the air into the cavity of the nose when the constrictor pharyngeus superior is inactive. Thus the patients can without any impediment breathe through the nose. But as soon as the constrictor contracts the cavum pharyngo-palati (this happens, as I will repeat for the sake of clearness, in the utterance of every letter, with the exception of *m* and *n*), the muscle already named reclines against the vertical back-surfaces of the obturator. By this operation the air-current is prevented from entering the cavity of the nose and compelled to take its way through the mouth, and thus the utterance loses its nasal sound. To the existence of those vertical surfaces, and consequently to the thickness of that part of my palates which fills up the fissure in the soft palate and the cavum pharyngo-palatinum, I must attach special importance. But for that thickness, the levator palati, when it rises upwards, would not remain in contact with the side-edges of the obturator, nor would the constrictor pharyngeus be able to effect a sufficient termination if the portion of the obturator nearest to it consisted only of a thin plate."

The following engravings illustrate the instruments described above:

ILLUSTRATION I.—Case of an acquired defect of the soft palate.

Figure A. Representation of the mouth without the apparatus.

- " B. The apparatus *in situ*.
- " C. Side view of the apparatus.
- " D. The apparatus seen from the back.
- " E. The apparatus seen in front.
- " F. The apparatus seen from below.
- " G. The apparatus seen from above.

The plate (a) and its narrow and thin apophysis (i), which extends from the boundary (b) of the hard palate to the commencement of the defect (c), serve only as supporters to the real thick obturator (d).

The latter lies in the pharyngo-palatine hollow, so that the lower surface of the obturator turned towards the mouth is about on the same level as the rest of the velum palati (e). Against the vertical side (f) and back-edges (g) of the obturator, the walls of the pharynx lean, if the latter is contracted by a contraction of the superior constrictor of the pharynx. But if the muscle just mentioned is not in activity, the obturator does not touch the pharynx wall. The contraction of the constrictor superior, therefore, closes the valve formed, with the help of the

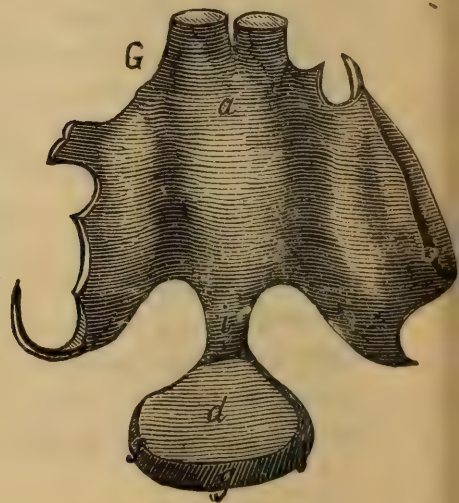
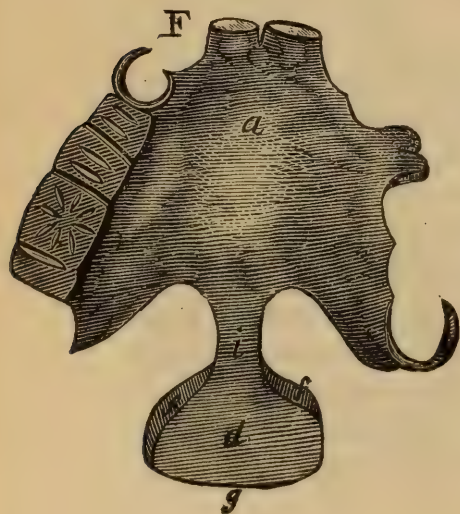
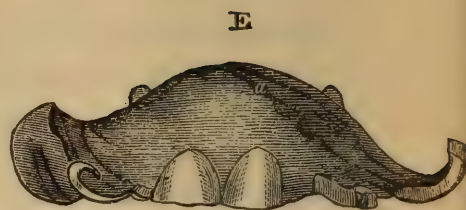
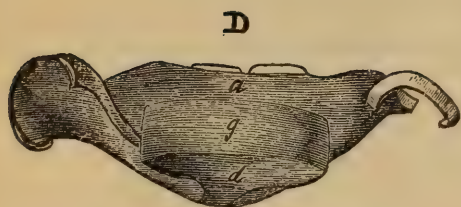
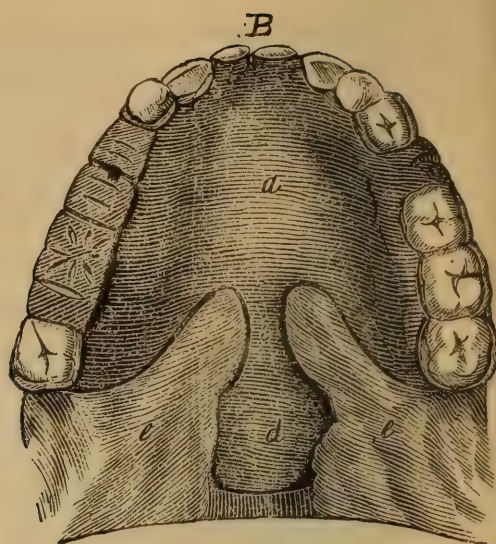
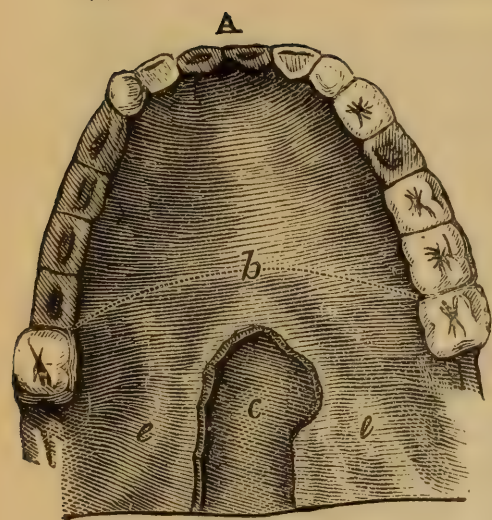


ILLUSTRATION I.

obturator, between the cavity of the mouth and that of the nasal bone, while any relaxation of the above-mentioned muscle immediately re-opens that valve.

ILLUSTRATION II.—Case of a constitutional fissure of the hard and soft palate.

Fig. A to G as in Illustration I. The designation of the letters, likewise, is the same as there.

The thickness of the obturator begins where the fissure in the soft palate commences. With the high side-edges (h) of the fore-part of the thick obturator (which edges ascend, not straight, but obliquely, towards the outside) the side-halves of the fissured velum palati (e) are in constant contact; even the latter is raised by the action of the muscular levator palati. The proportions of the back part, which, in the same manner as in the case of an acquired defect, fills up the cavum pharyngopalati, are as in Illustration I.

K. (See Fig. A and B.) The two halves of the fissured uvula."

This form of an obturator in case of acquired palatine defects does not possess any superiority over any other method of construction, which should make it remarkable. It has already been shown that a variety of forms may be adapted which will improve articulation, if the one characteristic be maintained—viz.: that when in use the adjacent muscles are able to meet it and shut off the nasal escape of sound. *It is only when applied to congenital fissure with success that it rises into a meritorious position.*

Ten years have now passed away, in which the principle has been put to a number of tests, and some judgment may be passed upon it; and there is proof quite sufficient to sustain the position that the constrictor muscles of the pharynx may be educated to the performance of functions which they would never be required to exercise in conjunction with perfectly developed adjacent organs. To their increased activity and extra developed power is undoubtedly due the readiness with which patients acquire articulation in cases where the velum has been totally destroyed by accident or disease, and its place supplied by a very crude substitute.

My own experience leads me to the conclusion:

1st. That in all cases of congenital defects the patient will acquire correct articulation more easily and more certainly with an elastic velum scientifically adjusted than with any other form of apparatus.

2d. That in a majority of cases of the like defect, a patient will never acquire distinct articulation with an obturator.

3d. That where a patient afflicted with a congenital absence of the

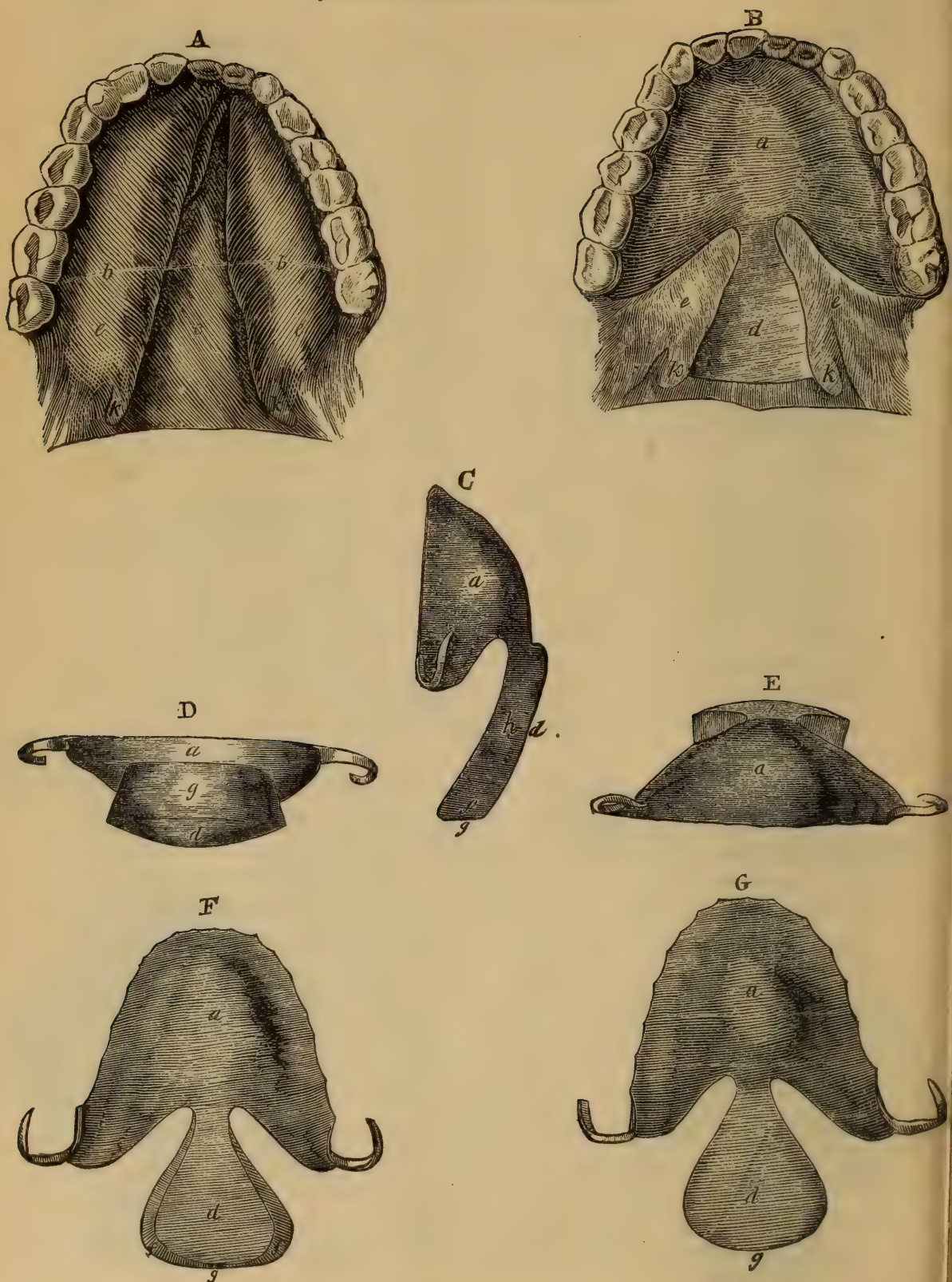


ILLUSTRATION 2.

palate has overcome the difficulty by wearing an artificial *velum* until clear and distinct articulation has been acquired, they may exchange the velum for an obturator, and continue to articulate properly.

4th. That of all *obturators* to supply deficiencies of the soft palate and induce correct articulation, the one introduced by Suersen contains the truest principle, and is best adapted to the purpose. Acting on these convictions, I have, in late years, treated fissured palates upon these principles—viz.: A patient of intelligence is supplied with an artificial velum, after a plan to be indicated in another article. As this form is a very near approach to the absent organ in form and characteristics, it is expected that, with proper application, improvement in articulation will immediately follow, and that the improvement will continue until perfection is attained. When this period is reached, which may be in a few months or in a few years, the elastic and more perishable velum may be exchanged for a permanent obturator, so adjusted that the partial education of the pharyngeal muscles, as organs of speech, may be completed.

This treatment has been carried out in a number of instances with my most promising patients, and with most gratifying success.

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## É TUDE SUR LA GREFFE DENTAIRE.

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Par Le DOCTEUR TH. DAVID.

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(*Continued.*)

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### III. CONSOLIDATION.

We have just seen that after the replacing of the tooth the periosteum resumes its organic adherence to the alveolus. It is this physiological process which assures the firmness of the transplanted teeth. Some authors, however, have not thus understood the consolidation. Seeing in it no organic phenomenon, they have attributed it to the jointing and to the mechanical pressure of the alveolar cavity and gum around the root. This theory, sustained by Duhamel, Pauli, Jourdain, Maggioto, Pfaff, Richeraud and Lisfranc, would seem to find a certain support in the experiments made by Mitscherlich upon the transplanting of dead teeth.

But, in addition to the fact that a success thus obtained would be of short duration, we would bring forward against such a theory, that we hold as entirely false, the various experiments in which the re-establishment of the vascular connections of the periosteum and pulp has been seen. Hunter had already said, "We can never obtain the consolidation of a tooth which has been extracted long before, or which is dead." Let us conclude, therefore, with the majority of authors, that the consolidation of a tooth planted in the alveolus is made by the organic reunion with it of the periosteum and the gum. It is not accomplished by any physical mechanism, but by a series of phenomena of vital order. The transplanted organ henceforth becomes an integral part of the organism upon which it has been planted. But besides this reunion, which we might call *periostal*, we should say a word about another kind of organic consolidation of the teeth. There are but few practitioners who have not sometimes met with great difficulty in the extraction of one of these organs affected with old periostitis, finding great and even insurmountable difficulties, in no wise referable to root or socket malformations. Fauchard shows us that such are isolated cases. According to this author, Mr. Mauquets, who had made several transplantations, replaced once a healthy tooth which had been extracted by mistake. Several years afterwards this tooth, though not decayed, suffered such pain as to necessitate a second extraction. "This was done only after several trials, and by bringing away with it a part of the lower jaw." Fauchard explains the affair thus: "The peridental membrane having sustained some loss of its substance, and the part of the alveolus being entirely stripped of it, the tooth united itself to the bone thus laid bare, and formed one body with it, which accounts for the impossibility of extracting the tooth without bringing a part of the jaw with it." The cement, being of a bony tissue, differing very little from the alveolar tissue, we can readily understand how a bony union was effected between the root and alveolus.

Philippeaux and Ollier have transplanted with success, by restitution, and by transplanting little shields of bone, which afterwards united after the manner of the formation of lime (?).

But it is very improbable that there is an immediate union of the cement to the alveolus. We think that if this bony union takes place, it is only pathological, and in consequence of the inflammation of the periosteum. This, according to the properties of periosteum in general, may well give rise, by its inflammation, to the production of bony tissue upon the two surfaces; and if in one or several places it is destroyed, the

two layers of new tissue become fused, and the bony union of the tooth to the alveolus is produced. These are simply theoretical ideas, which we make, waiting for some observations to confirm or contradict them.

We have, so far, considered the anatomy and pathological physiology of the dental *greffe* only in the case of teeth planted in the alveolus. That must be certainly the most favorable means to success in practicing the *greffe*, for it best realizes the normal conditions in which the tooth is found. The tooth, indeed, in this case, always resumes its connections with its alveolus, or an alveolus like its own: there is a joining together of the same tissues as before its separation. These things must be very different when they concern the planting of a tooth in a place which did not originally contain one. In spite of all experiments made, science knows the fact only of three cases of teeth transplanted with success into anything but an alveolus. They are those of Hunter, Cooper and Philippeaux. Most of those who have occupied themselves with the *greffe* have agreed that they only succeed when placed in its own original socket, or in some analogous place, having like composition and structure of tissue; and assert that the heterogeneous *greffe* would be eliminated or re-absorbed. These conclusions seem to us rather hasty. As to what concerns the dental *greffe*, one could certainly reproach Hunter and Cooper with not having left the transplanted organ long enough in its place to wait for *reunion*; but one cannot do this to Philippeaux. In his experiment the transplanted part remained ten months in place, and so far from being RE-ABSORBED, it grew three millimetres longer.

Admitting, then, the possibility of this manner of transplanting, how is the consolidation accomplished? All that we know is, that when the dental periosteum is put into vascular communication and continuity with the adjacent tissues, there would seem to be an immediate reunion. It would be interesting to study in detail the organic phenomena which take place during this *greffe*, especially after a little time had elapsed, and to see what would be the fate of a tooth engrafted upon the *derma*, for instance. Then, to have the most favorable conditions, one must not expect to try Hunter's experiment again; it would be better to experiment without changing the zoölogical species, or, with species that were very similar.

An important question remains to be decided: the ultimate fate of a tooth which has been transplanted with success, and is perfectly consolidated. The replanted, or transplanted, organ having recovered its normal connections with the organism, probably will follow the physiological evolution of its life, as if it had never been isolated from its place. But

can we attribute to it the same *length* of life? Our own observations on this subject can only apply to experiments tried two years before; but on the authority of others, we can affirm that there have been successful cases which lasted sixteen years. Besides the longevity of the tooth, there would be its predisposition and its resistance to the pathological affections, as compared with the other teeth, to be considered. From what we have read on the subject in different works, and from the little experience which we have had, we do not think that a successfully transplanted tooth is either more or less subject than the other teeth to *morbid alterations*. After having studied the phenomena which determine the success of the *greffe*, it will be well to say a word upon those which accompany its failure. In their experiments of *greffes* of dental follicles, Messrs. Legros and Magitot have proved that in the unsuccessful cases there is *resorption*, or elimination by suppuration, of the transplanted part. In adult dental *greffes*, the failure is always due to the last-named cause. The production of matter prevents the reunion of the dental periosteum to the alveolus, and from that time the tooth contracts no organic adhesion, and is rejected as a foreign body. This is what we have observed in an unsuccessful experiment of Mr. Magitot. In the two other cases, spite of suppuration, the tooth adhered at certain points, but not sufficiently to keep the tooth in a state of fixity necessary to its *functions*, and it would, besides, have been sooner destroyed by the *intra-alveolar* matter, if they had not relieved the patient by extracting it.

We have now said all that we know about the dental *greffe*. As we have repeated several times, we lack the requisite knowledge which would enable us to give a complete account of it. There are still many experiments to be made in this direction, and all the *histology* of the *greffe* remains to be studied.

#### *Consolidation of Teeth which are Deprived of Life.*

We have but a word to say on this question, which does not properly belong to our subject. Mitscherlich has given it much attention, and he says that he might have gone so far as to make teeth which had been several years deprived of life become quite solid in the alveoles. He even used, in his experiments, to select teeth which, by long soaking in hydrochloric acid, had been freed of their soft and organic parts, and afterwards preserved in a state of desiccation.

We would not appear to doubt results which, nevertheless, seem to us surprising.

In the following manner the author explains the mechanism of this consolidation, which is, moreover, purely mechanical, and quite another thing than the *greffe*.

After the extraction of a tooth, the peridentium becomes the seat of the formation of bony tissue. (Mitscherlich believes that the periosteum is divided by extraction.) Let a solid body be placed in this alveolus, and the irritated periosteum will produce bony substance, which will surround this body, pressing upon it more and more; the new bony tissue will not be found in even layers, but in little *buds* (bourgeois), which, by pressure, make little cavities upon the surface of the foreign body, in such a way that, if this is so solidly fixed as not to become detached from the alveolus, it will remain as if dovetailed by bone buds, which penetrate into the cavities which they have made.

After this mechanism, we can readily understand the failure which attended experiments with metal or porcelain teeth, which have too polished a surface, and upon which the bone buds cannot make cavities as they do upon the roots of natural teeth.

But, though admitting this theory of Mitscherlich, we think that either sooner or later the root must be entirely worn away, so that the crown will be fatally eliminated. Yet this author, and Serre before him, have proved that teeth planted in this way were solid after two years had passed.

Mitscherlich even experimented upon a dog, transplanting into his mouth an upper incisor, which he took from the jaw of a dog that had been dead several years. The animal was killed six weeks after, and they were able to prove that the tooth was solidly fixed in its place, and that you could not move it. The gum, even, with it, was in its normal condition. The tooth adhered firmly to the surrounding parts. There was no suppuration anywhere. As to the peridentium, a few insignificant vestiges only were found of it in certain places. Where the periosteum had disappeared, the tooth was worn in the same manner as an ivory pin would be that had been inserted in bone. The wearing away was noticeable at the level of the irregular cavities hollowed in the dental substance. These contained bony tissue which were applied (*appliquait*) directly to their partitions, without the interposition of any other tissue. It was because of this arrangement that the tooth had acquired such solidity.

In spite of all we have said, we cannot give our support to mechanical consolidation. For here there is nothing favorable to the phenomena of encystment, which is sometimes observed in surgery. The

alveolus is open, and it seems to us that every foreign body which is placed there must induce a suppuration, which would be more likely to encyst the foreign body than to eliminate it.

We have been able to prove the truth of this assertion, in one of the unsuccessful cases at which we have assisted—a case of replanting made by Mr. Magitot, and of which we have already spoken.

### *Different Kinds of Dental Greffe.*

There are different ways of making a tooth which is completely isolated from its alveolus resume its nutritive connections, which is, after all, the important point of the *greffe*.

In the first place, putting a tooth back into its own socket is called “*greffe* by restitution.” Placing it in an alveolus, which did not formerly contain it, is called “*borrowed greffe*” (*greffe* of borrowing, literally).

Many variations in this *greffe* can be introduced. One could, by way of experiment, plant the tooth of an individual in another alveolus or another part of his body. That would be an *autoplastic greffe*. But if the tooth were taken from another individual, that would be *heteroplastic greffe*, either human or animal.

Finally, the “*borrowed greffe*” may be either adult or embryonic.

In spite of the very interesting results attained by Messrs. Legros and Magitot, this has never received any practical application, and new experiments are necessary. We shall speak here of the adult *greffe* only. Among all the varieties that we have established, some never have been, and we hope never will be, practiced among men.

One cannot understand, in fact, the utility of the dental autoplastic *greffe*. It is evident that there would be immense difficulties in the way of finding in any animal a tooth whose form and dimensions corresponded to ours; and besides, do we not know, from numberless experiments, that to make animal transplantings, changing the zoölogical species, is almost always to fail? Only two varieties of the *greffe* can be applied to man.

1. The *greffe* by restitution.
2. The *greffe* by human *heteroplastic*.

(*To be continued*).

## REGULAR MEETING N. Y. DISTRICT DENTAL SOCIETY.

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HELD AT THE RESIDENCE OF DR. O. A. JARVIS, 119 WEST 13TH STREET,  
DR. WM. H. ALLEN IN THE CHAIR.

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## INCIDENTS OF OFFICE PRACTICE.

Dr. Jarvis: A young lady, fourteen years of age, a week ago Saturday, in playing with companions on the sidewalk, fell in such a manner as to break the superior left central incisor entirely off, but not exactly square. The piece that is off is a little shorter on the mesial face than on the distal. The pulp was not exposed, but so nearly exposed that, by looking directly at the end of the tooth, I could see the color. It was somewhat sensitive to thermal changes, but not sufficiently so to be called painful. The tooth was not loosened by the shock. Now, the question arises, what is best to do with it? This portion which I hold in my hand is not fractured, and could be replaced with a couple of screws or staples very perfectly; but, of course, it would not, probably, be permanent. A porcelain tip could be adjusted, or the point could be built down with gold. But any one of these three plans would not seem to be very promising as regards durability. My own decision would be to lengthen the tooth—drawing it down by the usual process in such cases, and then by trimming the edges a little it would present a very fair appearance. I would not, perhaps, bring it down more than, say, two-thirds of the distance that is necessary to reach the level of the other teeth. I would like to have an expression of opinion in regard to this case. To prevent any harm from thermal changes, I saturated the fractured end of the tooth with creosote and oil of cloves combined, perhaps for five minutes; after drying, applied oxychloride without producing any shock whatever. That was a week ago Saturday. Saturday last it was just as I left it; the oxychloride remains there at present. The portion broken off is about one-third of the length of the crown.

## SUBJECT: THOROUGHNESS IN DENTAL OPERATIONS.

Dr. Jarvis: I will not encourage the idea that was advanced in one of our Societies recently, that when a man has passed half of a century of years, he is, in a measure, incapacitated from practicing dentistry; thus intimating that henceforward he is to perform operations of a lower degree of excellence. I believe we should raise our standard to this

point—the *best every time*—and never countenance or encourage anything less on the part of any individual, old or young, whatever the operation may be, and whatever the circumstances or fee.

Dr. J. S. Latimer: I want to say that thoroughness does not necessarily confine itself in its exaction to the highest sort of operations. If a man insert an amalgam filling, and insist that it must be finished at one sitting, the likelihood is that it will not be finished as it ought to be. I have my patients return after the amalgam has hardened—not later than a week—and then I finish the filling as nicely as a gold filling; and I think by doing that I make the amalgam capable of doing better service to the patient. And so of gold filling: if they are not thoroughly finished, they are not as well done as they may be done, and are a shame to the operator. A good amalgam filling is better than a poor gold filling. There is no magic in the filling material. I had a patient in my office, recently, about five months gone in pregnancy, with teeth that once were beautiful, but going like wild-fire, and as many as five teeth discolored by the death of the pulps in the anterior portion of the mouth. I cleansed them as well as I could, and left a little cotton, with carbolic acid, loosely in the canals, and gave the patient an instrument with which to pick out the cotton, and re-fill with other, if necessary—she having her residence out of the city. I mention that the canals were not closed, yet the patient had trouble with one or two of the teeth. I have asked myself, how could that be, when I, as carefully as I could, penetrated, or, as our Philadelphia friend, Dr. Flagg, would say, “tapped” each of those teeth with as little irritation as I possibly could, and left the teeth open, as I supposed, for the escape of gas? Yet there was trouble; and it occurred to me that perhaps something had been pushed through the foramina. It has occurred to me, also, that the broach, which, having sanies on it, might wound the parts beyond the apices, and so produce blood-poisoning. I call attention to that as something possibly worthy of our further thought. Again, perhaps something beyond the apex of the root may be pushed against the root, and serve as a sort of valve, and mechanically close it. That the patient was in a condition that rendered trouble liable, I am aware; but how to account for the local difficulty, I cannot say, unless I have guessed it in one of these surmises. I had a patient in my office, a few days ago, with tears in her eyes, and poor teeth in her mouth—wretched ones, nearly all the teeth soft and going rapidly—a young miss of about fifteen or sixteen. The teeth were of large size, and yet soft and going rapidly. The caries was what is called the “white decay.”

What in the world can I do for that girl? I found two pulps exposed and inflamed and aching. I applied the rubber dam and medicine to devitalize those pulps. What hope have I? What promise, more than a mere temporary mitigation of the woe that surely awaits her? I have some patients so constituted that they seem to have no healthy tissue in them, and it makes me feel dissatisfied with myself, sometimes; and when I first came out of college, I should certainly have said, you have the wrong temperament, and, therefore, you had better go home. I would have said that because there was a scrofulous taint, according to the instructions I received, that it was not a very hopeful case. But now, when they say to me, consider the temperament of the patient before you determine the treatment, I go to work as though the patient had *no temperament at all*. If I had a sick baby, and a doctor, fresh from school, should say, "Your baby is not the right temperament and diathesis for successful treatment, and I guess I will go home," I should let him go; I should send for another, for sick babies *do* get well—and so of a tooth. But will it pay to put large gold fillings in these teeth that are going so rapidly with white decay? Of course, I can do that. The mechanical part is a small matter; but whether I would be justified in putting large gold fillings in those teeth, when I feel morally certain that in less than a year they will have to be repaired, I have my doubts. If I had put in those fillings, I should be inclined to think I had not done the best for the patient. Where I can use tin on buccal surfaces, I do it; but it don't wear well on grinding surfaces. I should have it in my own mouth if I had such teeth. Sometimes physicians are so unfortunate as to help this tendency by the administration of medicines that seem to cause very rapid caries, in spite of our best fillings, to our great mortification; and in such cases as that, the cause being only temporary, we may well use the gold. I would like, if any gentleman has had any experience with a mixture of tin and gold, to state his experience. If there is anything in the hypothesis—which, as yet, is *only* an hypothesis—announced by Dr. Palmer, of Syracuse, I think, I wish he would mention it. I have used tin and gold in one or two cases, but have heard nothing from them, and cannot say what has been the result. I filled a molar tooth for a patient. The tooth was not a valuable one. A gold filling would not have answered the purpose, I think, and I thought of introducing amalgam; but that would compel him to return to have the amalgam filling finished. I introduced, in that case, platinum cylinders covered with gold, making a filling rapidly, and giving me an opportunity to finish the filling at once.

Dr. C. E. Latimer: If we are going in the right direction, go thoroughly; if in the wrong direction, go gently, or not at all. I prefer to leave discolored dentine over the pulp than to go thoroughly in the direction of the pulp; and although my practice is not upheld by many of the profession, yet I believe I save a great many pulps in that way. If we are going to separate the teeth, I would say, "Don't go thoroughly in that direction." I recollect a case just now where the second bicuspid and first molar above, and the corresponding teeth below, had been separated, and the patient came to me with the teeth pain- ing him from periostitis, caused by the crowding of food into this space. I believe that a reaction is taking place in the profession against this practice, and I am glad to see it, and I wish here to enter my protest against such separations. Meat will crowd in and irritate the periosteum. This patient assured me that the side that was separated upon, was entirely useless to him for masticating meat ever since the separation had been made. I could not restore the corners that had been cut away, but I relieved the irritation as well as I could, applied iodine around the gum, told the patient to chew soft food on that side and meat on the other, to be careful in cleaning it, and to use a quill and not a wood tooth-pick; not to allow the pick to crowd down upon the gum at all. Again, in regard to thoroughness. We can make our operations too expensive for our patients by spending too much time on them. We want to save their teeth and they want them saved. We don't want to say, go to an outsider, giving gas, and have them slaughtered. Our conscience won't allow us to do it. If they lost a leg they would not go to the most expensive artificer to get the latest improvements in artificial limbs, but would stump about on a pine stick of their own whittling; how absurd, then, to fill a broken back tooth with a mass of gold, when it can be saved as long at one-quarter the expense, and in one-quarter of the time. We must do such work for them as they can afford to pay for. It is a good thing for us to make sacrifices, but we must not ask too much sacrifice on their part. We must make such operations as we think will preserve the teeth as long as possible, and yet make it come within their means and ours. We may save their teeth, and yet not spend the amount of time we would if they amply compensated us. I have to do this. I know that we can drive such practice away from us, and do work that will be more ornamental, so that it will take longer and we will get more money, but if we have consciences we can't do that very well. I do a great deal of work for poor people at very low rates, knowing I am saving their teeth, and that I am rendering an honest, fair equivalent for the money

I get. Yet this is not work I am proud of as specimens of my handiwork. I think I am conscientious in doing the work rapidly, so that I can do the greatest possible amount of good in the shortest time, using amalgam and tin where it is out of sight.

Dr. Odell: I had a case of a poor patient, just as Dr. Latimer speaks of, coming many miles to have a set of teeth cleaned and the gums treated. She was so poor that she wanted it done quite cheap. Well, I told her it would be cheap at \$25, and I think it was. I think so still. It took four pretty decent sittings to get the work so far. She has been under treatment for a month, and the gums are very nice, and, with the exception of two or three loose teeth, they are in very good condition. That price didn't include any filling. The first sitting was about three hours, the second about an hour and a half, then about two hours, and one to-day of about an hour. That I call cheap. I could not have made an ordinary set of teeth and done her justice with a single plate for any less money. I would not offer to do it. I tell people that if they want a decent set of teeth, they can afford to give a little more money and make a little sacrifice for the teeth. Speaking about cutting the matter short for the sake of cheapness, and not have it thorough, I don't know how to do it, except it is to rush on without regard to pain, which is more expensive than if you go carefully and love them a little, and make them come back and have an amalgam filling finished like a gold filling. If I saw the weak tooth Dr. J. S. Latimer spoke of, and I was doubtful about putting amalgam in, and thought I could do it better with something else, either gold or Hill's stopping, why, I would fly to gold. Gold costs so little more than tin, and I can work it so much better, that I can do better work with the gold, and I don't care who sees it. That is the thought—that some other fellow might see the work and damn me to the patient. To cap that thing, I have worked two-thirds of this day for two patients, all for \$13, and pay \$1,200 a year rent.

Dr. Atkinson: The spirit moveth me to say that thoroughness should first begin in our *preparation*, to understand the responsibilities upon us as professional men; and if we were to take a survey of those in practice to-day that are prepared, we probably would find that they were those who had not had the greatest facilities when they began. A man must be thoroughly begotten, gestated, born, nursed, raised and educated, to be a thorough dentist. These wretched abortions of miserably "gotten-up" bodies and souls are not fit for dentists; and I am pained when I hear this question discussed, for I know that thoroughness is not very prevalent. There is one particular direction in which thoroughness, in

my estimation, is more wanting than any other, and that is in seeing that each mouth is put in a completely healthy condition, irrespective of the amount of labor, cost, effort or remuneration. The man who is not in earnest to ask God's help at his work, irrespective of the amount of money realized in any case, cannot be thorough; for I hold that no man is able to see in advance what is necessary to be done. Men who make bargains—bargain away their peace of mind—bargain away their conscience, if they have anything worthy the name of conscience. I would do for the poorest and most abject as good a piece of work as I would do for the queen; and I can prove that has been my practice for years. I have peace of mind, if I have nothing else. *I have* something else—I have *instruction*! I have seen teeth very fairly filled, with a dark, calcareous line around their necks, and not a word said by the operator who had done the work. I have seen many patients, with very fairly treated teeth otherwise, entirely neglected as to their occlusion. He who does not take cognizance of how the teeth occlude, is derelict in his duty. I have in mind a case where this is true. A lady complained (when her mind was not occupied some other way) of this uneasy fullness. I looked at the mouth, and saw it was a case of what we call “jimber-jaw.” An attempt was made to bring the crowns of the teeth together; but instead of this, the cusps were in contact. The molars had been filled on a level with the cusps, so that she had blocks to pound on, but no teeth to bite on. I trimmed them down until they occluded properly from the bicuspid back, letting the incisors not quite touch. One reason why these had to be cut down, was, that in their attempts to regulate the teeth, they were brought so that the edges struck on each other, in place of passing like shears. I took a disk, and cut down the gold until I secured the proper form of the first and second inferior molars of both sides. She has gone home, saying she never knew before what peace was. I have a young lady, now, who has been, for the last ten years, constantly grinding her teeth, when she was reading, or sewing, or doing anything that allowed her jaws to come together without speaking, so that her friends had found a great deal of fault with her. She had beautiful fillings in her teeth, but they were striking in this way. They were very large in proportion to the size of the jaw. I did the same thing for her—cut them down until the occlusion was as it should be. She writes and says she is entirely free from a desire to grind the teeth any more. Any of you who have studied this matter at all will see that thoroughness in this direction is almost unheard of. How can we be thorough? Not until we understand the foundation principles

of function. The whole medical fraternity have befogged themselves by saying that we must mind the temperament. Dentists have made a mistake in the same regard. Any baby that is born, if properly cared for and fed, can be developed up to the measure of type of its being, whether scrofulous or not. These cases are not diagnosed until the mistake is made—until the demon has left his track. Thoroughness! A man can't lay down to sleep and ask the angels to watch him, if he is not thorough. What does it mean? Thoroughness in all the requirements which are upon him. Some of these are honest men, as far as regards honesty; but efficiency requires intelligence, and specific intelligence, so that we may know how to perform the duty assigned to us, and do it thoroughly. How short do you suppose is the career of alveolar abscess in the hands of the dentist? Surgeons know next to nothing about it. Simply because dentists have been nearer, and paid more attention to it. What is the reason they don't succeed better? It is because they are not thorough. They don't know they must cut through the line of demarcation that you see as a red line along the external ulcers. They don't know they must go through that, and let fresh blood penetrate to the sick or dying territory. We must know the action of the blood in changing from clot into embryonal corpuscles, and then take the order of reproducing the lost tissue. The connective tissue, the nerve tissue and bone tissue can be reproduced so exactly after the normal plan, as to defy discrimination from the original. Thus, as the carpenter says, we must "know the timber in which we are at work," and know how it behaves; and that we never will know until we become histologists, and get hold of the structures at the point where function itself occurs. First they said function was the work of the "solids"; then of the "fluids"; then of the "nerves"; and then of the "cells"; and now we have modified that into "embryonal corpuscles," "protoplasm and its molecular modifications"; and what next will be the pronounced pathology?

The "inclusive" giving each its due and proper value, because these stages have something to do with it; the blood has something to do with it—the cells have something to do with it—and we will see, upon close inspection, all these prior organisms, before they were cells, were formative corpuscles, that I have heretofore called "molecular mass" and "mural mass." When we see all this, we will have a pronounced physiology, in which no abortion will present itself. Then we can diagnose our cases, and then have a cure by bringing them back to the normal and healthy state. Dr. C. E. Latimer said he would rather not

'expose pulps. Thank God for that illumination. Don't! 'You can't make as nice a cover as nature did, under any circumstances. But when a pulp is exposed, don't destroy it. Don't call that thorough. This is the idea of iconoclasts rushing in to tear down. That is not thoroughness! Consider your mass of dentine, even though it be reduced to protoplasm. I should prefer, as a remedy, the aromatic sulphuric acid, for many reasons. So that I don't contradict what I said before, except that we want something there to arrest the fermentation—the fermentative activity. What is that? It is a tearing down process, and it has its expression in chemical manifestations. All those cases which have been presented here as being complicated and difficult, are simple when we make them so. Why, God bless you, what will you do? Set down and fold your hands, and say, God help me? I don't care how much you cry, if you put not your shoulder to the wheel and do something. Reduce the case to simplicity and go through, and each step will open the way for the next step, and you will wonder that you thought the case a complicated one. Just reduce it to its elements and conquer the elements one at a time, and you will get along. That will conquer the worst cases of soft tissue, with ordinary intelligence. And to say, as Clowes said, that dentists are "a curse to mankind"—good God! where is the man's conscience, if that is his estimate of what other men are doing? We must be careful about the misapprehension of our duty. My molecules tingle with anger at such thoughts—that it should be possible for a man to continue to look upon an honest man, and that be his inmost conviction! He must have been under some demoniac possession, for he knows better. He don't *do* that kind of thing. There must be a swamp angel in his imagination, for if there is a clear-headed, pure man on this planet, it is a complete dentist. The dentists that are honest men are the pinks of perfection, and stand on the very pinnacle of clean-cut, luminous mental apprehension.

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For the past thirty years I have been a dentist. Every five years has so changed the pillars upon which our practice is based, that you cannot recognize it as belonging to the same profession, the same calling, or the same family of callings. But we are going on with such an impetus, that in a little while we will stand forth in such manifest *truth*, that no dog in the Holy Mountain can wag his tongue against it! Such an estimate of dentists as that my soul so loathes, that I have no language to indicate the hate I have for such. It is my wish to do the best I can for my patients, and be thorough for the benefit of the patient.

On motion of Dr. Francis, the Society invited Dr. Atkinson to read his paper at the next meeting. The subject for the next meeting was then announced. It is: "The best method of packing gold." On motion, it was decided that the January meeting be on the second Tuesday, instead of the first, and that the clinic be held on the same day.

Adjourned.

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## ON PASSING EVENTS.

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BY "PHOSPHOR."

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### THE LATE CONFERENCE AT EDINBURGH.

The time has now certainly arrived when the dentist in practice can no longer safely ignore the periodical literature of his profession. Of late important events have succeeded each other with such rapidity, that he will find himself sadly benighted if he neglects these repeated warnings.

The time was when the ordinary dentist might go plodding on, thinking only of his own selfish gains, always pleased with his own attainments, the father transmitting to the son the little information he possessed, and the son thoroughly satisfied with the instruction derived from the father, and, so that a respectable balance at the banker's was maintained, both contented with their lot in life. This state of things is, however, fast passing away, and we must, whether we like it or no, go with the times.

Let any one dispassionately read the account of the Conference of Dentists held in Edinburgh last month, or, what is better still, let him confer with any one present at that meeting, and I think he will arrive at the safe conclusion that dental reform has now fairly set in. The opening remarks by the Chairman, at that Conference, seemed thoroughly to annihilate all attempt at opposition, and I cannot understand any one dissenting from the conclusions arrived at. The most rabid "associationist" cannot fail to see how great a distinction existed in the past between the surgeon practicing dentistry, and the educated dentist knowing something of surgery. "The qualified surgeon had to gain technical skill, and this he trusted to acquire by the experience afforded by the treatment of patients or from private instruction," while the arti-

cled pupils of an established dentist's had a special training fitting them for practice. "They might," as Mr. Tomes remarks, "be but amateur surgeons, still they were real dentists."

The whole of Mr. Tomes' address is so thoroughly practical and conclusive, that its effect would only be lessened by making extracts. I therefore seriously commend it to the attention of every member of the profession. Let it be read, not solely because it emanates from a distinguished scholar and a steadfast reformer, but essentially for the good common sense contained in it, and the reasonable conclusions arrived at.

Through the courtesy of the editor of this journal, I am permitted to make these comments on "passing events," and I think I may venture to assert that, with equal liberality, his columns are open to any one prepared to try and refute any of the statements advanced. Nor should the little influence these remarks endeavor to carry with them lose their power simply because they are written anonymously. The reader may rest satisfied on one point—the author's name carries no weight with it, and he prefers that his arguments alone should guide their judgment.

It is a great pity that most of the dentists of the present day avoid entering into discussions on matters affecting the welfare of our body. When questions of such vital importance are before the profession, a respectful hearing should be given to all parties; but if gentlemen will not state their views, how is it possible for those who are merely lookers on to arrive at correct conclusions? It is true that silence is supposed to give consent; and, moreover, the reform committee being composed of men who may be said to have been selected for their opposite views, every section of the profession is well represented.

If the arguments which Mr. Tomes advances will bear the scrutiny he desires for them, let every dentist give them his hearty support; if not, do not sit sulking in a corner biting your nails, like a set of overgrown school-boys, but boldly state in what you differ from him, and be assured you will receive a respectful hearing, for "when the title of dentist is made to signify a properly-educated practitioner, we shall no longer hear of dentists who are ashamed of their calling at home, and who shrink from speaking of their occupation when abroad."

#### THE DENTIST IN EMBRYO.

So many important subjects seem to spring out of the Conference of dentists in Edinburgh, that I feel hardly able to keep up the running

commentary I proposed. A few words on the education of the dental student, however, demands attention.

Mr. Tomes has shown that two years is the *shortest* time in which the student can acquire the needful amount of operative skill, even if surrounded with fellow-workers to whom he can constantly refer, and whose manner of working he can frequently witness.

Dr. Walker enters more fully into this subject, and very clearly demonstrates that the student should have previously had three years of diligent work at the bench before entering upon his hospital duties. "I noted," he continues, "the advantages the student of mechanical training had over those without. The opportunities the hospital furnished were seized upon at once, and carried through during the two years of hospital practice with a success delightful to witness, while the student without this mechanical training only appeared to wake up at the commencement of the second year to find half his opportunities vanished. If you admit this fact," Dr. Walker proceeds, "attention to the mechanical department of our art is worthy in itself to be well studied, fitting, as it does, the student for his more responsible duties in the operating room."

Having had considerable experience as a pupil teacher, and being able to point with satisfaction to those whose early training was entrusted to my care, I should like briefly to refer to the plan I have invariably adopted, agreeing, as I do, with every word Dr. Walker has spoken.

The age at which a student can best enter upon his professional training is sixteen. He will have had ample time to pass the preliminary examination in arts. During the first year's pupilage he should acquire a general knowledge of the practice of a well-regulated workshop, gradually training his fingers to a facility in all those operations so necessary if he desire to secure after success. The second and third years should find him continuing these manipulations, so that at last he is not only well versed in mechanical dentistry, but also practically conversant with every process and manufacture he may, perhaps, later in life, be called upon to superintend. On the fourth year, having casually, during his leisure hour, dipped a little into dental anatomy and physiology, he will be fitted to enter a dental hospital. His fingers will have acquired a certain amount of manipulative skill, and his judgment will have so far been matured that he will be conversed with the characteristics of all teeth. One half of his day will now be devoted to dental hospital practice and instruction, and the other half to a continuation of his mechanical work, the one form of employment giving relief to the other.

Arriving at his fifth year, he will continue his dental hospital practice,

and enter also upon his general hospital studies, leaving him now but little time for dental mechanics until the term of his apprenticeship shall have expired. In his last year he will be thus left free to continue his hospital studies, and thoroughly to prepare himself for his examination.

The pupil should also as carefully avoid *over*-study as neglecting his various opportunities. A certain amount of time should be given up to healthy recreation, and he should try and eschew, as much as possible, late night readings. The brain becomes excited, refreshing sleep is not afterwards obtained, and the following morning finds him unable to grasp the subjects presented in his various lectures and demonstrations. To learn well is to learn rapidly enough; one subject being thoroughly mastered, the others will appear to be more readily learned. Avoid, as much as possible, jumbling up one matter with another, and never try to make the brain do what a little memorandum book can more readily accomplish. The subject, however, is a large and tempting theme, and one which I hope on some future occasion to be able to return to, unless some more experienced hand will relieve me of it. Let the title be "The Health of the Dental Student."

#### ANNIVERSARY MEETING OF THE ODONTOLOGICAL SOCIETY.

The ordinary meetings of this Society will commence on the 5th of November, and it is to be hoped that in the coming session the members will bestir themselves to keep up its prestige as a scientific body of practitioners.

As the object of the Society is not only to encourage the diffusion of knowledge in dental surgery, but also to promote intercourse among members of the dental profession, it appears to me that more use should be made of the anniversary meeting than has yet been attempted for that purpose. The ordinary business of the Society need not occupy many minutes on this occasion, and the President's address upon retiring from office offers an excellent opportunity for reviewing the proceedings of the past year, more particularly the progress that has been made in consolidating the interests of all dental practitioners. And, since it is acknowledged that the Society has, and can again, take cognizance of our political existence, the subject need not be entirely shirked. But, above all, the opportunity should not be lost sight of as a means of introducing the country members to London and suburban practitioners. This anniversary presents an excellent opportunity for holding a *conversazione* on a liberal scale. The Society has ample funds at its disposal, and cannot apply them to a better purpose than that of endeavoring to carry

out one of its acknowledged objects—the promotion of intercourse among its members. Let the lukewarm sneer and vote a conversazione a bore; the want of enthusiasm in the few should not dishearten the many. As the space we have at our disposal is at present limited, let the admission be confined to members of our own Society. Plenty of interesting appliances are waiting to be exhibited. Take, for instance, electro-magnetism—1st, as a motive power, its use in turning our burring engines and working our various stopping mallets; 2d, its application as a means of giving light, particularly during these dark winter afternoons; and, 3d, its uses for gilding and general electrottype purposes, etc. But what inducement can be greater than that already alluded to, the opportunity of conversing with those distant members we so seldom meet, and who might be prevailed upon to pay us a flying visit on an occasion like this?

It is to be hoped the honorary secretaries will require no further prompting, but if it is to be done, let it be done properly. No cheese-paring, if you please, gentlemen.—*British Journal of Dental Science.*

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[From the *Dental Register*.]

## THE DEVELOPMENT OF DENTINE.

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By C. SIHLER, M.D., Fellow in Biology, John Hopkins University.

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Koelliker, who, if I understand him rightly, had entertained similar views as Salter on dentine, has changed his views in the last edition of his work on histology, and on page 336 says, “Although I had been the first one who had isolated the dentinal tubules to a great extent, I was afterwards misled, after Tomes had described a soft fibril in every dentinal tubule, to take the tubes which I had produced and those fibrils for one and the same thing, against which identification Neumann raised objections. He showed in a most excellent little work that the dentinal tubules had special calcified walls (dentinal sheaths—Neumann), and that these contained in their interior a soft fibril. (Tooth fibril—fibre of Tomes.) Although recently H. Herbs has adopted my later views, I cannot but think that Neumann is in the right. The arguments are:

1. “If, by boiling in caustic potash of sections of teeth, or by prolonged putrid maceration of whole teeth, the soft parts of the teeth are destroyed,

the walls of the dentinal canals can, after the removal of the lime-salts, be brought into view by aid of the measures which I mentioned, while the fibrils can in no way be shown."

Here I would ask—1. How can one know at what time all the soft parts are destroyed? 2. What is really meant by soft parts? 3. Cannot some uncalcified substances stand as much chemical action and time as some calcified ones?

I have found that when I treated my sections with caustic soda until I thought that all the soft parts were destroyed, the whole section melted down before the hydrochloric acid, like ice in warm water; and as far as putrefaction is concerned, that is a little doubtful manceuvre, for in decaying teeth, where we are sure that putrefaction is really at work, we see that the whole of the dentine, sheaths and all, is destroyed. The very existence of a tooth proves that putrefaction has not been going on very intensively. If one exposes, for example, the pulp and pericementum to caustic soda, and boiling at that, or to strong muriatic acid, he will find that these "soft" tissues, although soft in a certain sense, have properties which make them persistent.

The second argument of Koelliker to prove his statement:

2. "The elements isolated by Neumann and myself, can, as I have said from the beginning, plainly be distinguished as tubules."

I have no doubt at all that these elements are tubules, but I cannot see that their calcification is in any way proved by the arguments so far.

3. "Upon the examination of dentine which is undergoing formation, it is found that every forming cell (odontoblast) sends a soft fibril into the interior of the dental tubule (Lent. I. Neumann), and there can (Neumann) be shown, with the aid of muriatic acid, besides these fibres, also the dentinal sheaths."

Here I would again like to ask why Koelliker quotes Lent, Neumann and himself, in proving the existence of the fibril as a process of the odontoblast, and Neumann only in proving the existence of the sheath aside of or with the fibre?

Further, this argument is nothing further than a repetition of the proposition to be first proven, and every one has, of course, a right to disbelieve this statement, until the exact method is given how such facts can be obtained. I have made a section through the root of a developing tooth so very thin that there was to be seen but one layer of tubes, as it were, and in front of a small number of canals, the odontoblasts were still attached, while in the greater portion they were detached. This section I exposed to the action of strong muriatic acid; after this had

operated long enough to dissolve all the homogeneous matrix, I found as many fibres, apparently, as there were canals before, and where there had been an odontoblast, this was connected with a fibre or tube. Of course, where there had been no odontoblast attached, there the fibre or tube ended where the dentine had ended before. Now where are the sheaths of Neumann, together with the fibril of Tomes? The process of the odontoblasts are either the one or the other; or are we to call those where the odontoblast is detached the sheaths of Neumann, and where it is not detached the fibre of Tomes, so that all the investigators may have the honor of some discovery?

Of course, with carmine, one can prove that within the tubule, or within the fibre, or in the interior of the fibre, there is another kind of substance, and if to that, without the covering, the term soft fibril will be given, I will not object, although it seems an unfelicitous term. But terms I intend not to fight; but to mix up several things, and to create two things out of one, that mode of reasoning I cannot agree to.

4. "The same cell processes can also be seen in fully developed teeth proceeding from the cells on the surface of the pulp and entering the dentinal canals, and in longitudinal and cross-sections of decalcified dentine the soft fibres can be recognized in situ."

As far as this evidence is concerned it is not at all convincing to me, for decalcification will disturb the structure enough to make observations upon the contents of the dentinal canals a little doubtful, as far as seeing a soft fibril in longitudinal sections—I fail to see how one can see the softness, and how one can fail to see something like a fibre; and as far as cross-sections are concerned, I suppose in fresh teeth, of course, there is within the tubule or sheath or fibre the material which is stained with carmine, and which is pressed out from the fibril, according to Tomes, in round drops; and a cross-section will, of course, not allow an empty tube to appear. But I admit the tube, and I admit its contents, but only cannot see how the sheath of Neumann and the fibril of Tomes can be shown or seen side by side.

5. "On picking to pieces sections of decalcified dentine, fibrils can frequently be seen protruding along the edges (Tomes), but it is to be taken into consideration that also the dental sheaths can be seen protruding in this way."

Here Koelliker admits himself the possibility of taking a tubule for a fibre, and *vice versa*, and it is not necessary to say any more.

Frey and Waldeyer have about the same view on dentine as Tomes and Koelliker, and the same arguments hold good against them as those

against Tomes and Koelliker, but, for completeness' sake, we will quote Waldeyer also. He says (Strickers' Manual), page , "The dentinal fibres constitute the soft parts of dentine. They do not lie in direct contact with the hard matrix, but are invested by sheaths, the dentinal sheaths of E. Neumann, which are intimately connected with the matrix. After the fibres have been removed by maceration or by incineration of the tooth, the dentinal sheaths remain, and even after destruction of the matrix by boiling muriatic acid, or in caustic alkalies, they constitute the only perfectly indestructible residue of the tooth."

Now this is really remarkable, and I must say that the fire used in Europe for "incineration" must be not as hot as fire is here, or the acid and alkalies not so strong as these chemicals are on this side of the Atlantic, or their sheaths of Neumann must be something of the nature of platinum or diamond. It seems, indeed, these sheaths are quite indestructible in the minds of the investigators there.

"The fibres easily stain with carmine. They possess a remarkable degree of extensibility, so that, especially in young teeth, the dentinal cells may be separated to a considerable distance from the dentine without rupture of the processes, which then appear like harpstrings stretched over the interval. Salter, in recently describing the fibres as tubules (because when dry they appear to contain air vesicles, and exhibit a dark central point on a section), had probably the dentinal sheaths under observation. The fibres are really completely solid and homogeneous."

We see here the same arguments, and even Salter's writing did not seem to have made it possible for the writer to consider if not his dentinal fibre and sheath were the same thing. How a fibre can be completely solid and homogeneous, and stretched like harpstrings (Waldeyer), and on rupturing let a thick fluid exude (Tomes), and be stained with carmine—all these properties united make really a remarkable object.

Beale's view on the structure of dentine we find in his lectures, translated by Carus, Leipzig, Engelmann, page : "There are few anatomical questions which have called forth a more lively controversy than the structure and formation of dentine. The latest author on this subject, Lent, describes the dentinal canals as consisting of the direct process of the odontoblast: 'Die grundsubstanz des zahnbeines entsteht nicht aus dem Elfenbein zellen, sondern ist entweder ein Ausscheidung dieser Zellen, oder der Zahnpulpa ähnlich einer Interzellular substanz.' (The basis substance of dentine does not originate from the ivory cells, but is either an excretion of these cells or of the pulp of the tooth, similar to an intercellular substance.) Tomes now has shown that the dentinal

canals are tenanted by a soft formation, which can be seen in the form of solid processes, protruding from the broken off ends of the dentinal canals [Koelliker says that the same appearance is produced by Neumann's sheaths]. The correctness of these observations has, however, been doubted by several observers. I have been able to verify the assertions of Tomes as regards the filling up of the dentinal canal with a soft formation, and place before you a preparation in which this substance is colored red with carmine, and can very plainly be seen. The tooth canals of a living tooth are never empty; they are no tubes at all, nor channels for the transmission of nutrient substances held in solution by fluids, but they contain a soft, solid formation, the central portion of which is in a condition of active vitality."

We do not doubt, of course, that the contents of the dentinal tubes can be stained by carmine; but must we, on that account, admit that that which Tomes shows by muriatic acid, fracturing and stretching, be the same thing as that which Beale shows by staining? Must we admit that because there is germinal matter in the canals, there are no tubes there? That would be quite peculiar logic. Of course Beale shows, with his method, the inner portion of the contents of the canals, which is bioplasm. Tomes shows, with his method, the outer portion, or the dentinal tube, which is certainly not the soft, semi-fluid, germinal matter; and although in a living tooth Tomes' and Koelliker's fibril contain the bioplasm of Beale, their arguments do not point out the same.

In Todd, Beale & Bowmann's *Physiology*, page 353, Beale, when speaking of the structure of the bone, gives his views more implicitly on some points. "The innermost layer of tissues, constituting the wall of the lacunæ and of its canalicule, differs in resisting properly from that which is external—not that this tissue is developed separately from the germinal mass of the bone texture. Its greater hardness is probably due to its very slow formation, as in the case of the so-called wall of the dentinal tube, which affords another instance of the same sort of artificial distinction of texture, and which has led to a similar view concerning its formation as a texture distinct from the so-called 'intertubular tissue.'"

Why Beale calls it an artificial distinction, if attention is called to the difference in chemical composition between the homogeneous intertubular mass and the tubules themselves, I cannot understand. If nature uses something of the nature of leather, and something of the nature of glue, in the contraction of her apparatuses, why have we not a right to recognize both? Beale makes distinctions, by the aid of carmine, between formed and germinal matter; why are we forbidden to analyze the formed matter still further? And why is not the distinction which mu-

riatic acid makes of some value, just as well as that which carmine makes?

I suppose Beale opposes the special tubule, because it tastes like the "cell wall," and because it opposes his doctrine that the portion of formed matter nearest to the bioplasm is always the latest formed. But this does by no means follow from the theory of bioplasm—*i. e.*, that bioplasm always makes or precedes formed matter. Theories have to be made after facts, and not facts ignored on account of theory.

If it now be asked, how came this variety of theories concerning the nature of dentine, I think it may be said, the reason is that there are only a limited number of facts or observations taken in consideration when the theory is made, and the causes for that are that the general theories of some will not allow a certain number of facts to become prominent; and again, that by others other facts are assumed which need proof, and which are then in the way when they appear in reality.

For example, Beale dwells especially upon the distinction between formed matter and germinal matter, and therefore lays great stress on the facts revealed by carmine, while he ignores the special texture of the tubule, because he is fighting the cell doctrine, and because the tubule would agree with a cell membrane. Others, again, neglect staining, and rely chiefly on the facts brought out by muriatic acid, or think that all soft tissues are destroyed, and then imagine that they have destroyed all the soft, uncalcified parts, and, without giving proofs, assume the presence of tubes, and then, when it comes in their way in different form from what they expected, they think it is something else.

I think the view here given in this paper on the structure will be agreeable to all the facts that have been brought out, and not only that, but in forming the conclusion almost every fact was used, and had to be used. There was neglected neither the staining nor muriatic acid, nor stretching the tubules or fibres, nor the dead tooth, nor the living and growing tooth, neither longitudinal nor cross-sections. This view of the structure of dentine, it will be seen, has its support further in the structure of bone, tendons, cornea, whartons, jelly and others. For here we have also the yellow, elastic substance either in membranes or in fibres, or threads, together with a homogeneous substance between them which differs also in the different tissues, being like glue, for example, in tendon, and like mucus in the fibrous tissue of the umbilical cord. And as to the direct production of the yellow elastic, we have an unmistakable proof for that in the development of the ligamentum nucae, where there is no other texture formed but the yellow elastic fibre, and where we can see that these are a direct product of the germinal matter which we find connected with them.

## "FILLING TEETH AND PREPARATIONS OF GOLD FOR FILLING."

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By Dr. L. C. TAYLOR, before the Connecticut Valley Dental Society.

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I once heard a worthy father of the profession remark that he was glad young men could inform their patients of the positive durability of their operations.

Forty years' experience had taught him to be a little cautious how much he promised. Not long since I heard an elderly member of this Society answer the question, What per cent. of our operations do you call valuable?

His reply was, that he would throw aside one-half of the operations performed at the present day as worthless, and many of them even worse than that.

One-half of the other half is of some value, but in few instances equals the expectation of either patient or operator. The other one-fourth will pass for pretty fair dentistry.

If such is the experience of the elder members of this Society, is it not time that we younger members make some inquiry why so many of our operations prove failures? When we see a filling made for a life-time fail in from one to two years, ought not we to inquire, why this failure?

Many, and perhaps a large percentage, of the decays found, may be traced to one of two causes—the mechanical relations of the teeth to each other, or the peculiar secretions emitting from the gums. It is a question to be determined in each particular case, and the premises prepared before the operation is commenced.

We seldom find a mouth where the teeth are badly crowded, except we find decay working either in the incipient or more advanced stages, and it is usually accompanied with an acid condition of the fluids.

In very many instances the latter is induced by the former.

If we find a mouth where the teeth are all regular and even, I am satisfied that the profession in general are inclined to look for nothing more than the total number of cavities, and seek for no further preventive than a good filling. We are much mortified to find, one or two years later, that the beautiful jewel we have taken so much pride in making has not accomplished the object for which it was designed.

Filling teeth is one of the prominent features of the dental practice, and I will be the last to detract from the merit due to filling teeth.

There may be ways of controlling decay in the crowns of molars and bicuspid's other than filling; but I am not informed of any theory that may be followed safely, except to make a good filling. It is my firm belief that judicious management on the part of the dentist will arrest decay, and render unnecessary three-fourths of the fillings made in the approximal surfaces of the teeth.

The teeth may be crowded sufficiently to induce a low, sluggish inflammation, assuming a chronic form.

The gums become diseased, emit an unhealthy secretion and produce a fever in the mouth, often undermining beautiful fillings, and causing general destruction to the teeth.

In many instances exostosis follows.

Ninety per cent. of the cases of neuralgia in the face may be traced to one of two causes—exostosis or dead teeth.

I was once informed by a worthy practitioner in Boston, who at that time had practiced forty-nine and one-half years, that it had been his experience that it was better to thin out the teeth while the patient was young, than allow the development of a case as described above.

I am a firm believer in the mechanical theory of preserving the teeth, but while that is of vast importance, it is just as important that we surround our mechanical operations with a healthy and wholesome mouth.

The so-called approximal cavity is the one we are called upon to fill more often than any other, and there seems to be a variety of opinions how the filling should be made to best preserve the tooth.

Some believe that the separation of the teeth with the rubber or the wedge, and the full restoration of the original form of the tooth, is the better course to pursue.

Others adopt free and permanent separation, leaving their work protected by the easy cleanliness that is usually found when this course is pursued. A close observation has shown that in nearly every instance where we have seen approximal fillings that have lasted from twenty to thirty-five years, there had been a permanent separation.

In some instances the artistic method has been adopted, as may be found illustrated on the pages of Dr. Arthur's treatise on "Prevention of Decay in Teeth," the V-shaped space on the palatal side, leaving the front to present the full beauties of nature, unblemished by the glaze of gold, that is so often seen at the present day.

Others resort to the more vigorous use of the file, sometimes marring the outward beauty of the teeth, leaving shoulders near the gum to retain the space that has been made.

But even the latter is preferable to the full contour; for in that case we have brought about the same condition we had in the first place, and a repetition of our work is only a matter of a few years' time.

The best joint that can be made will be able to resist the destroyer but a short time, unless protected by thorough cleanliness.

It is hardly just in us to make a filling so it will be nearly or quite impossible to remove the food that will lodge during the process of mastication, and then censure the patient because he has neglected to keep them clean.

If Nature, in all her fullness, has failed to protect herself, and decay is rapidly advancing, it seems hardly wise to attempt to imitate her in form, with all the weakness necessarily accompanying our operations.

Having noted a few important features to be diagnosed, we are now ready to commence our filling.

I do not know how I can present this matter better than to improvise a clinique, and bring the patient before you in the form of a plaster model, which will, in a measure, demonstrate my method as adopted in the case the model represents.

Supposing the cavity is in the lateral incisor, we proceed to separate freely, especially on the palatal side, until we have gained free access to the cavity.

We then prepare the cavity for filling, leaving the walls but slightly undercut at any point.

We find at the cervical wall the enamel is quite thin, and a short distance above the cavity it ceases entirely, leaving the dentine exposed to the soft parts which adhere and protect it so beautifully to the free margin of the gum.

This is considered the weakest point in the filling—hence the necessity of guarding, with all due care, against fracturing the enamel, and at the same time so thoroughly condense the gold as to render it water-tight.

In my opinion, no filling should be commenced until we have free access to the entire cavity.

It is far better to sacrifice one-third of the entire tooth-crown, and save the other two-thirds for future use, than run the risk of losing the whole.

When the cavity is properly prepared, I frequently adjust the matrix (improperly called the wedge) for four reasons:

First. To aid in making the enamel secure against breakage while the filling is being made.

Second. To simplify the cavity, and render it but slightly more difficult than the ordinary crown cavity.

Third. It so forms the cavity, that when the filling is properly packed, it needs but little trimming, especially at the cervical wall, and, in many instances, nothing more than a faithful burnishing.

Fourth. The matrix annihilates any necessity for large or small retaining pits, which are so often drilled at the cervical wall, endangering the weakest point in the cavity, and often splitting off the thin enamel, leaving the edges rough and ragged.

I have described the common approximal cavity, and the same principle will hold good in nearly all classes of approximal fillings, except larger cavities in the bicuspid and molars, which can be filled from the end, as will be seen from the cast I shall very soon pass around for inspection.

You will notice the matrix adjusted to the bicuspid as when the tooth was filled, and after the filling was made there was no finish required near the gums more than burnishing.

Many cavities are cut from the front and filled; but the almost invariable result is, that the tooth will turn dark at the palatal wall, and decay will soon undermine our filling.

The reason is obvious; for we have made a beautiful pocket to retain food while it undergoes fermentation, and the lip only serves as a lid to hold it in position.

Should the patient attempt to remove the food with his pick, he would only force it to the bottom of the pocket, and defeat the very object which he was trying to accomplish.

When the reverse is adopted, it will readily be seen how the food may be forced into the open space with the pick, or, in most cases, can be removed by a slight suction.

I have referred to burnishing fillings, and allow me to say a word regarding this very important feature in the manipulation of gold.

To make bright is the definition of burnish; but I do not think it expresses what ought to be meant by the term as usually applied.

I have made some inquiries of dentists what they meant by burnishing fillings.

In a number of instances I have found that they implied it was to expand and more thoroughly consolidate the gold against the walls of the cavity.

Experience has demonstrated that we ought to spend two-thirds as much time in finishing our fillings as we spend in packing the gold, and in some instances more time is required.

The more adhesive foils, when packed in the cavity, may be expanded

by hard rubbing, and fillings made of soft foil are susceptible of considerable expansion.

Many a filling that has stood the test of time was made perfect by the vigorous use of that invaluable instrument—the burnisher.

It has been my purpose to omit entirely that part of our question relating to the preparations of gold for filling.

There are many manufactories in the country, and nearly all have a number of preparations.

Without doubt, each and all possess some qualities of merit.

The style of the operation to be performed will determine somewhat the kind of gold best adapted to secure the end.

I am yet to learn that any of the new preparations possess qualities of adaptation superior to the common, old-fashioned soft foil.

There surely is none that can be manipulated more readily, and I believe, in ordinary cases, it possesses cohesive qualities sufficient to enable us to restore as much of Nature's form as will be practical.

In all operations that we perform from day to day, let us be faithful to ourselves and our patients.

Always seeking to know why some operations prove a success and others prove failures.

When we have demonstrated beyond question the better course, never be governed by selfish motives, or unwilling to own that we have been in an error, for the purpose of maintaining a self-righteous dignity, even though it conflict with our previous practice.

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## L'ODONTOLOGIA.

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We have received the last few numbers of this new Italian journal, which is conducted by Dr. Luigi Ribolla, an Italian dentist of Naples. We are pleased to see that it is well-supported by dental contributors, and does not depend on translation from foreign journals to fill its pages. Among the chief contributors we observe the names of Zapulla, Angilleri, Carratozolo, Scibetta, Sibletti, Teraly, Sonentino, and, though we mention him last, not least, our friend Luigi Martini, who is well-known to our leading London dentists as a frequent attendant at the Dental Hospital of London, although in practice with his father at Turin, and already in possession of an Italian medical degree. Some of the

papers in these journals are very interesting. We would especially note a *résumé* of the cell theory by Signor Ribolla. It is a preface to one of his essays on the "Physiology of the Teeth." He commences by noticing the oldest theories promulgated by Malpighi in 1670, in the course of his discovery of the blood-globules. He then proceeds to review the various theories of Leeuwenhoek, Haller, Wolf, Prochaska, Hensinger, R. Brown, Valentine and others, till he comes to Virchow's theory, that the cell must not be considered as a *caput montum* of the tissues, but as that from which the tissues are derived and developed according to his own motto, *omnes cellulæ a cellulo*.

Dr. Vito Zapulla contributes an article on "The Cancerous Diseases of the Mouth," in which he says that all the necrotic diseases of the mouth should be called by the generic name of *stomacace*, which may be divided into *stomacace ulcero membranous*, *stomacace acynoso*? (acute or chronic), and *stomacace pollacio*?

Dr. Luigi Martini contributes an article on the rubber dam, in which he expatiates on its value for the exclusion of moisture from the cavity to be filled, maintains that most of the best operations of the day are due to its aid, and considers that those practitioners who look upon its application as so much time lost, only say so because they are unable to apply it properly, but once the knack of applying it quickly and effectually is attained its value is universally recognized. He describes the method of applying it in various difficult positions, such as in the wisdom teeth, etc.—*British Journal of Dental Sciences*

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## DO NOT FACE THE LIGHT WHEN AT WORK.

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Statistics kept by oculists employed in infirmaries for eye diseases, have shown that the habits of some persons in facing a window, from which the light falls directly in the eye as well as on the work, injure their eyes in the end. The best way is to work with a side light, or, if the work needs a strong illumination, so that it is necessary to have the working table before the window, the lower portion of the latter should be covered with a screen, so as to have a top light alone, which does not shine in the eyes while the head is slightly bent over and downward toward the work.

In the schools in Germany this matter has already been attended to,

and the rule adopted is to have all the seats and tables so arranged that the pupil never faces the windows, but only has the side lights from the left; and as a light simultaneously thrown from two sides gives an inference of shadows, it has been strictly forbidden to build school rooms with windows on both sides, such illumination having also proved injurious to the eyes of the pupils. We may add to this advice not to place the lamp in front of you when at work in the evening, but a little on one side, and never to neglect the use of a shade, so as to prevent the strong light shining in the eyes. This is especially to be considered at the present time, with kerosene lamps, with intensely luminous flames, becoming more and more common.—*Medical Journal.*

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## PLASTIC VS. GOLD FILLINGS.

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The subject of Plastic Fillings seems to be occupying a very unusually large share of attention now on both sides of the Atlantic. A leading paper, at the last (Nov.) meeting of the New York Odontological Society, was on this theme.

In a recent article on the above subject, a well-known writer, quoting late utterances of American writers and particularly from the writings of Dr. H. S. Chase, of St. Louis, on Dental Alloys, says:— [Ed.

While I should be very sorry, with my present experience, to subscribe to all that Dr. Chase has advanced, believing, as I do, that gold fillings approach the nearest to perfection, I yet consider that the dental world is indebted to him for a great deal that is well worth listening to.

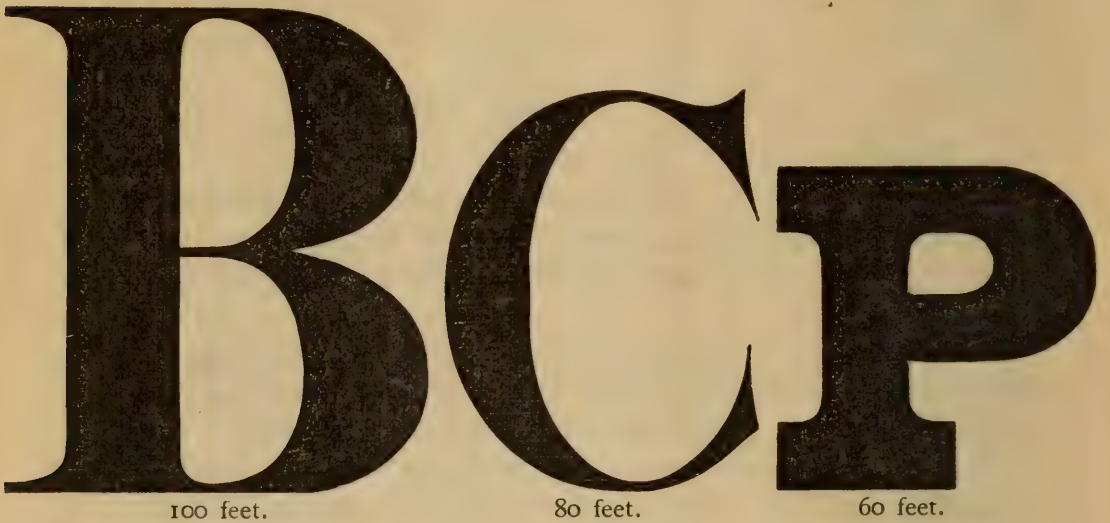
It has been the practice with many to attempt to fill badly decayed teeth, as well as those only partially diseased, with gold, and I cannot help believing that most of the failures referred to in the above papers are attributable to this practice. There is a limit even to the efficacy of gold stoppings, and teeth that require from twenty-four to thirty-six grains of gold to fill them, as advocated by some, I believe would be better preserved with an amalgam plug. The experiments that I have so far been able to make with plastic stoppings containing a larger percentage of gold are sufficiently satisfactory to encourage me to continue and warrant me in saying that I hope to be able to return to this subject on some future occasion.

FELIX WEISS.

## TESTS FOR VISION.

Dr. B. Joy Jeffries, 15 Chestnut Street, Boston, Mass., is desirous of ascertaining what proportion of people with normal eyes—that is, who do not wear glasses for distant objects—and also of those who have their focus perfectly corrected for distant objects by glasses, are gifted with a visual power above what is now considered good average vision, called vision *one*.

The following letters are selected as nearest in size to the test letters used by oculists all over the world. The letters should be hung up in a good light; and those of our readers who are able to see them distinctly



further off than the number of feet marked against each (which would be normal vision), are kindly requested by Dr. Jeffries to send him as above this information on a postal card, simply stating which letters were read and at what distance. From this he hopes to compile and publish some important data.

## BOOK NOTICES.

HARRIS' DICTIONARY OF MEDICAL TERMINOLOGY, DENTAL SURGERY AND THE COLLATERAL SCIENCES. By CHAPIN A. HARRIS, M.D., D.D.S. Fourth edition, revised and enlarged by F. J. S. GORGAS, M.D., D.D.S. Cloth, \$6.50; Sheep, \$7.00. 1878. Lindsay & Blakeston.

It can hardly be expected of a busy reviewer that he shall read a dictionary through, and yet less interesting reading can readily be found. Without, however, claiming to have been so thorough as that in our examination of this dictionary, the writer turned to several articles which, because of their recent introduction, might readily have escaped the eye of the editor; but in every instance he found the article described and the book abreast of the times. To every dental student or practitioner such a work is a necessity, and no better can be found than this standard volume.—ED.

MATERIA MEDICA FOR THE USE OF STUDENTS. By JOHN B. BIDDLE, M.D. Eighth Edition, revised and enlarged. Price, cloth, \$4.00. Published by Messrs. Lindsay & Blakeston. 1878.

The publications of this house are always distinguished for excellence of workmanship. Their paper and binding, composition and proof-reading, are uniformly to be commended; and the volume entitled as above is no exception to the rule.

The author has long been an authority with dental students, and, of course, needs no introduction at our hands. It is sometimes the case that a standard work is displaced by some rival of modern pretensions, rendered popular by plentiful illustrations, extra super-sized paper, and a display of type; but we know of nothing of the kind in the field of materia medica, and Biddle seems likely to maintain its position as the best at its price.—ED.

ANNUAL ANNOUNCEMENT OF THE DENTAL SCHOOL OF HARVARD UNIVERSITY, 1878-79. (Eleventh Year.)

This reprint from the Catalogue of the University is doubtless to be had by application to Prof. Thos. H. Chandler, D.M.D., Dean of the Faculty, 222 Tremont Street, Boston.

It is full of information which cannot fail to interest any student of dental surgery, wherever studying. The number of students in attendance is not large; but there is a large corps of instructors; and if each student faithfully works his way through the course of instruction promised and prescribed, he will have acquired all that a dental school can give him.—ED.

## NOTES.

### Opium Consumption in the United States.

The recent heavy importations of opium at this port have led to considerable comment, and various causes have been assigned. The following figures, showing the amounts imported during the present year, and its cost, were recently obtained at the custom-house and reported in the *Tribune*:

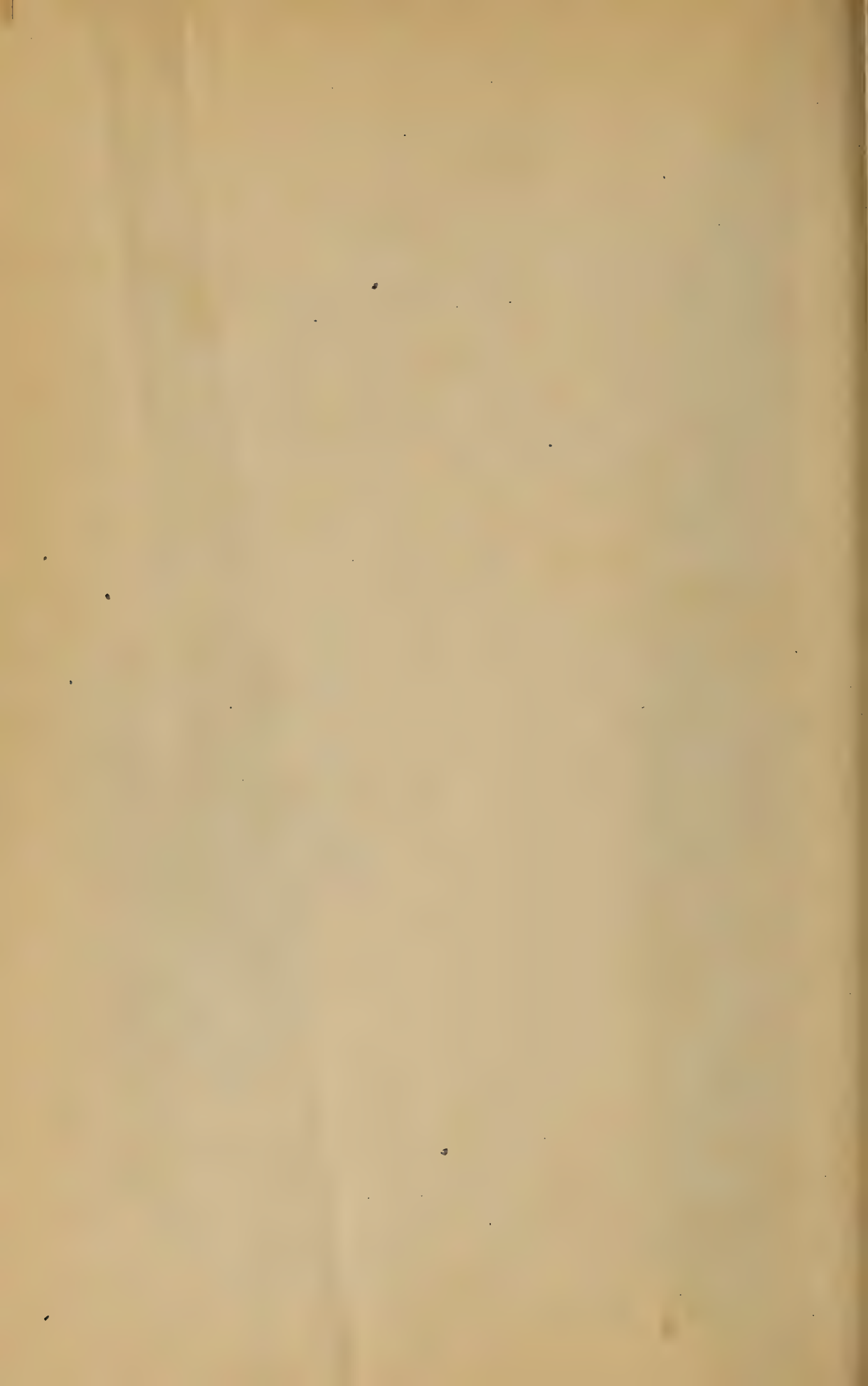
	Pounds.	
January.....	16,577	\$80,761
February.....	5,100	26,196
March.....	7,304	34,951
April.....	1,800	9,000
May.....	29,576	125,291
June.....	50,000	275,000
Totals.....	110,357	\$551,199

During the first week of July, 51 packages were received, averaging 150 pounds each, at a valuation of \$42,075. Said a heavy dealer: "When the war between Russia and Turkey broke out, a great speculative fever raged here, and scores of men with unemployed capital invested heavily, based on a probable war-tax by Turkey, or the closing of the port at which most of the opium is shipped. The price was thus run up to \$8 gold in bond, or \$9 in currency; but the port of Smyrna being so remote from the seat of war, the market has since declined to \$5.50 gold, and most of the outside speculators lost their all in six weeks' time. One man, a very clever fellow, invested his last dollar. I urged him to sell when the top price was reached, assuring him of a profit of \$20,000; but he persisted in waiting for more, and is now a bankrupt."

Smyrna and the contiguous country in Turkey is the commercial source from which this country draws its chief supply. The present crop is reported as unusually large, with a probable yield of 9,000 chests, or 1,350,000 pounds, which is largely in excess of last year. The following is reported as the receipts for two years at New York and Boston: 1875, 1,776 cases; 1876,

1,259 cases. The receipts at Philadelphia are unknown, but are set down at 500 cases a year, mostly used by two large houses for the manufacture of morphia. The new crop is now being gathered, and may be decreased or entirely destroyed by a cold snap or heavy rains. The task of gathering this year falls upon women, children and old men, all the able-bodied men being off to the wars. Opium is now as low as it has been for twelve years, only once in that period having declined below \$5 gold, duty paid, when there were several large crops in succession. The consumption in this country is about 2,000 cases or 300,000 pounds a year. Wholesale druggists and those who deal in opium as a specialty, ascribe the large increase in the amount consumed in part to the heavy manufactures which have sprung up within a few years, for the making of the tinctures and morphia. At the same time, they admit that a much larger amount enters into personal use than heretofore. "Notably is this the fact," said a dealer, "in the Southern States. Since the close of the war, men once wealthy, but impoverished by the rebellion, have taken to the use of opium to drown their sorrows." In South America and California a large amount of opium is also consumed, owing to their great Coolie population. It is further conceded that in certain quarters of this city, on Baxter, Division, Water and other neighboring streets, it is used to an almost alarming extent. One retail druggist on Division Street does a very large business in this line, retailing it in small quantities, from five cents a dose up, and every few moments, poor, half-stupid men and women may be seen emerging from his rear door with cups and tin vessels containing the black paste which is to furnish them hours of forgetfulness. Some few manufacturers employ opium in the preparation of a bogus Turkish smoking tobacco or cheap cigars, which are mostly used by the Chinese.









H.R. Abbott

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Author

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